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DISPOSAL OF CHEMICAL AGENT IDENTIFICATION SETS AT ROCKY MOUNTAIN ARSENAL, COLORADO

FINAL REPORT

VOLUME II

APPENDICES A-D

AUGUST 1983

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FINAL REPORT
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APPENDICES A-D

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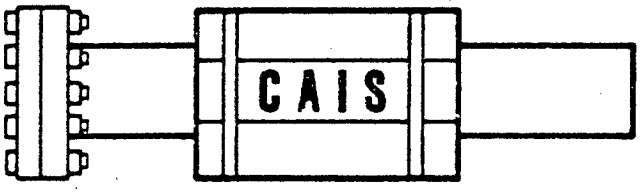

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VOLUME 2

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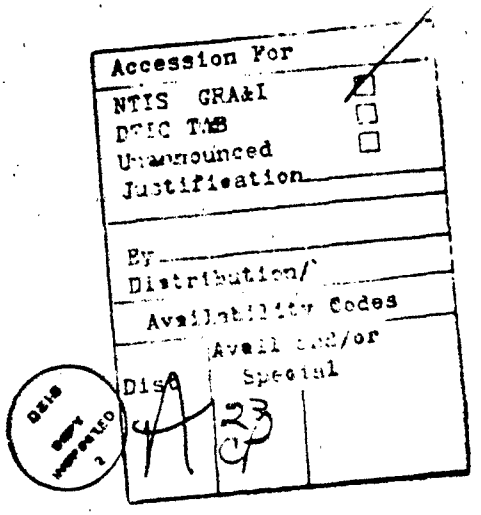

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APPENDIX A

APPENDIX A
OPERATION OF THE DATA ENTRY AND DATA PRINT PROGRAMS

A.1 OPERATION OF THE DATA ENTRY PROGRAMS

The ID Sets Data Entry Programs are a series of interactive computer programs that were designed to enter air monitoring, inventory and plant downtime data onto computer cartridge tape. The twelve computer programs are each stored in separate files on a single cartridge or program tape. The Data Entry Programs were written to utilize the Tektronix 4051/4052 micro-computers in conjunction with the Tektronix 4924 external tape drives.

The computer operator begins the data entry process by inserting the cartridge tape containing the Data Entry Programs into the internal tape drive of the computer. The operator then presses the "AUTO LOAD" key on the upper right-hand side of the keyboard. The "AUTO LOAD" feature automatically executes three functions:

1) FIND 1 - this statement tells the computer to find the beginning of the first program file on the cassette tape.

2) OLD - This statement directs the computer to load the contents of the first program file into the computer's memory.

3) RUN - This statement executes the program that was loaded into memory.

After pressing the "AUTO LOAD" key, the message in Figure A-1 appears.

From this time on, the interactive process between the computer and the operator continues. The computer communicates with the operator by printing messages on the screen of the CRT. The first question asked by the computer concerns instructions for using the program. See Figure A-2.

If no directions are required, the operator responds by entering an "N" and pressing the "RETURN" key. The computer then asks the operator if the data tape has been labeled. See Figure A-3.

An "N" in response to this question will result in the computer executing the tape labeling routine. The operator is then instructed to place a cartridge tape into the 4924 external tape drive. See Figure A-4.

Next the operator is asked a series of questions that will determine the internal label which will become the first record on the tape file. This record contains the day of the week and a numeric code which represents the data type. Once the data tape has been labeled, the operator is ready to enter data. See Figures A-5 and A-6.

The operator is now instructed to enter a data sheet number from a list of available programs. See Figure A-7.

The computer will then ask a series of questions that correspond to the data coded on the various data sheets. Selection of a data sheet number which corresponds to Analyst and Lab Coordinator Work Sheets will result in the computer asking a series

of questions similar to those given in Figure A-8. The questions asked for the MIRAN selection can be found in Figure A-9. Figure A-10 shows the questions asked for Bldg. 1611 Receipt Inspection. Five separate data entry programs exist for the Process Data. See Figures A-11 through A-16. Questions for plant downtime data can be found in Figure A-17.

Once the operator has finished entering data, he or she responds with an "N" to the question of more data. The computer places an "End of File" mark on the data tape and the program is ended. The data tape is then printed out, verified and edited.

A.2 OPERATION OF THE DATA PRINT PROGRAMS

The ID Sets Data Print Programs are a set of interactive computer programs that are used to print out air monitoring, inventory and plant downtime data. The Data Print Programs were written to utilize the Tektronix 4051/4052 micro-computers in conjunction with the Tektronix 4924 external tape drives and the Tektronix 4641 character printer.

The computer operator begins the data print process by inserting the cartridge tape containing the print programs into the internal tape drive of the computer. The operator then presses the "AUTO LOAD" key on the upper right-hand side of the keyboard. The directory shown in Figure A-17 appears and the operator is instructed to enter the data sheet number which corresponds to the type of data he or she wishes to print.

A message similar to that shown in Figure A-18 then appears on the computer screen.

The operator is instructed to insert the data tape into the external 4924 tape drive. See Figure A-19.

The operator then presses the "RETURN" key to begin. Data is then printed out on the 4641 character printer. See Figure A-20.

The procedure is similar, with the exception of downtime data, for all data types. The operator may be asked to enter the unit number for the external tape drive for some programs. The operator may also have the option of producing a hard copy via the Tektronix 4631 hard copy unit. See Figures A-21 through A-24.

The print program for downtime data has two options. Downtime data, the first option, prints a particular day's plant downtime data on the line printer. See Figure 25. The downtime data is stored on the data tape as a numeric code. The downtime print program translates the numeric code into the actual descriptive terms (names).

The second option prints the names corresponding to the downtime keys. In other words, the program prints *all* numeric codes and corresponding descriptive terms. See Figure A-26.

A.3 DATA CORRECTION

Once the computer operator has finished entering data, he or she then prints out the data using the ID Sets Data Print Programs. Verification of the data is performed by comparing the computer print-out to the original data sheets.

Errors detected during the verification process are corrected by the use of the Tektronix 4050 series R06 editor. The editor is an ROM pack that is plugged into the back of the Tektronix computer. The computer operator inserts the data tape that he or she wishes to correct into the computer's internal tape drive. The operator enters the statement "CALL EDITOR" from the keyboard in order to make the editor routines available. Editor commands and instructions on the use of the editor can be found in the Tektronix 4050 Series R06 Editor Operator Manual. This manual is available through:

Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077

A.4 OPERATION OF THE MERGE PROGRAM

The Merge Program was designed to merge the six separate data files of the inventory data tape into a single file that is acceptable to the USATHAMA Univac computer. The program also changes the dates given on the inventory data tape to Julian format.

The computer operator places the Merge Program tape into the internal tape drive of the computer and presses the "AUTO LOAD" key. The directory on Figure A-27 appears on the computer screen. Option 2 is selected. Option 1 (MIRAN 80 data) was discarded before the ID Sets processing activity was started.

The operator is instructed to place the inventory data tape into the internal tape drive. The output data tape is placed in the external 4924 tape drive. The computer reads the tape placed in the internal tape drive, reformats the data and writes the reformated data on both the line printer and the data tape located in the external tape drive. The data on the original data tape is left unchanged. The data on the new tape is now in a format compatible with the USATHAMA Univac computer. See Figure A-28.

A.5 OPERATION OF THE TOTALS PROGRAMS

The ID Sets Totals Programs are a set of computer programs that update data tapes for ID Sets processed, drums of waste and plant downtime. The Totals Programs also produce daily reports and reports for any given period of time.

The computer operator inserts the Totals Program cartridge tape into the internal tape drive of the Tektronix computer. The "AUTO LOAD" key is pressed and the directory in Figure A-29 appears on the computer screen.

Program 1 updates the processed ID Sets Totals and prints a daily report. The operator is instructed to place the inventory data tape into the internal tape drive. Another tape, the ID Sets Totals tape, is placed into the 4924 external tape drive (see Figure A-30). The ID Sets Totals data tape contains a running total by type of sets destroyed and is updated by the Totals Program.

Program 2 reads the ID Sets Totals tape and produces a report for any given period of time. See Figure A-31 for its instructions.

Drum totals are updated and a daily report is printed by Program 3. The inventory data tape for a particular day is inserted into the computer's internal tape drive. A Drum Totals data tape is inserted into the 4924 external tape drive. The Drum Totals data tape contains a running total by type of drums produced. See Figure A-32 for instructions.

Program 4 reads the Drum Totals data tape and prints a report for any period of time. See Figure A-33 for instructions.

Program 5 updates a downtime data tape but does not produce a daily report. See Figure A-34 for instructions.

Program 6 reads the Downtime Totals data tape and produces up to five different downtime reports for any given period of time. See Figure A-35 for instructions and Figure A-36 for the directory of downtime reports.

All Totals Programs print reports on the Tektronix 4641 character printer. The ID sets processed and drum totals routines contain an option for hard copies on the Tektronix 4631 hard copy unit.

GLOSSARY OF TEKTRONIX HARDWARE TERMS

List of Tektronix Hardware Used in ID Sets by Model Number

4051 A micro-computer containing 32K RAM high resolution graphics display, internal cartridge tape drive and BASIC interpreter in ROM.

4052 Enhanced version of 4051 containing a faster CPU and 64K RAM. Otherwise the two machines are compatible. Both use the same version of BASIC.

4631 Device used to make a hard copy image of the display on the 4050 series micro-computer. The copy is produced on heat sensitive paper that is suitable for reproduction.

4641 Character printer that can be connected to a 4050 series micro-computer through a serial interface module. The printer is used to produce printouts of all data.

4662 Digital plotter which can be used with the 4050 series micro-computers by way of the GPIB (General Purpose Interface Bus). The plotter is used to produce larger scale plots than can be shown on the screen. The plotter serves as an alternative display device that may be used as backup when the 4631 is inoperable.

4924 External cartridge tape drive that may be connected to the 4050 series Tektronix micro-computers. The GPIB is used to allow communication between the computer and the external drive. The external drive is completely compatible with the internal drive.

DO YOU NEED DIRECTIONS FOR USING THESE PROGRAMS? (Y OR N)

FIGURE A-1

INSTRUCTIONS FOR DATA ENTRY PROGRAMS:

1. FOR THE FIRST RECORD, A NUMBER OF X'S WILL APPEAR TO SHOW THE LENGTH OF EACH DATA FIELD. FOR EXAMPLE, XXXXXX REQUIRES THAT 6 OR FEWER CHARACTERS BE ENTERED.

2. AFTER THE FIRST RECORD HAS BEEN ENTERED, INSTEAD OF X'S, THE PREVIOUSLY ENTERED VALUE APPEARS. IF YOU WISH TO REPEAT THIS VALUE SIMPLY PRESS THE ENTER KEY. IT IS NOT NECESSARY TO REENTER THE VALUE.

3. IN SOME CASES (EXAMPLE: DATE, TIME, CONTROL NUMBER) THE FIELD MUST BE COMPLETELY FILLED.

4. NUMERICAL DATA MUST CONTAIN A DECIMAL POINT.

5. SOME NUMERICAL DATA MAY BE PRECEDED BY A < OR > SYMBOL. NO + OR - SIGNS ARE ALLOWED.

6. IF AN ITEM IS MISSING ENTER: M

7. IF AN ITEM IS NOT APPLICABLE ENTER: NA

8. IF YOU MAKE AN ERROR AND WISH TO BEGIN THE RECORD AGAIN PRESS USER DEFINABLE KEY #1 (UPPER LEFT). REENTER DATA FROM THE BEGINNING OF THE RECORD.

9. IF YOU WISH TO EXIT FROM A PROGRAM, PRESS USER DEFINABLE KEY #2 (UPPER LEFT).

THE PROGRAM CHECKS THE INPUT FORMATS AND WILL PROMPT YOU IF YOU MAKE A MISTAKE.

PRESS 'HOME PAGE' KEY TO CONTINUE

FIGURE A-2

```
DO YOU NEED DIRECTIONS FOR USING THESE PROGRAMS? (Y OR N)  N
HAS YOUR DATA TAPE BEEN LABELLED?  (ENTER Y OR N)  N
```

FIGURE A-3

```
 DO YOU WANT TO LABEL A DATA TAPE?  (ENTER Y OR N)  Y
 PLACE TAPE CASSETTE IN UNIT 4924
 ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
 IS THIS A BRAND NEW TAPE?  (ENTER Y OR N)  N
 ENTER THE COMPLETE NAME OF THE DAY OF THE WEEK   MONDAY
```

FIGURE A-4

```
 DATA
SHEET #   CONTENTS
-------   --------
   1      ANALYST AND LAB COORD WORK SHEETS (H, CK, CM, PB)
   2      ANALYST AND LAB COORD WORK SHEETS (AS)
   3      ANALYST AND LAB COORD WORK SHEETS (GB)
   4      ANALYST AND LAB COORD WORK SHEETS (L)
   9      ANALYTICAL DATA SHEET (MIRAN 88)
 10-15    INVENTORY DATA
  16      PLANT DOWNTIME DATA

ENTER DATA SHEET NUMBER FROM THE ABOVE LIST  1

THIS LABEL IS FOR DATA SHEET #1 FOR MONDAY
IS THIS OK?  (ENTER Y OR N)  Y

DO YOU WANT TO LABEL ANOTHER TAPE?  (ENTER Y OR N)  N

NORMAL END OF PROGRAM

DO YOU WANT TO ENTER DATA?  (ENTER Y OR N)
```

FIGURE A-5

```
DO YOU NEED DIRECTIONS FOR USING THESE PROGRAMS? (Y OR N)  N
HAS YOUR DATA TAPE BEEN LABELLED?  (ENTER Y OR N)
```

FIGURE A-6

```
DIRECTORY FOR ID SETS DATA ENTRY PROGRAMS
VERSION 0 - 05/03/81


 DATA
SHEET #   CONTENTS
-------   --------
   1      ANALYST AND LAB COORD WORK SHEETS (H,CK,CN,PS,T)
   2      ANALYST AND LAB COORD WORK SHEETS (AS)
   3      ANALYST AND LAB COORD WORK SHEETS (GB)
   4      ANALYST AND LAB COORD WORK SHEETS (L)
   9      ANALYTICAL DATA SHEET (MIRAN 80)
  10      BLDG 1611 RECEIPT INSPECTION
  11      PROCESS DATA - DISASSEMBLY ROOM
  12      PROCESS DATA - RESIDUE AREA (PIGS)
  13      PROCESS DATA - RESIDUE AREA (DRUMS)
  14      PROCESS DATA - SPRAY DRYER
  15      PROCESS DATA - ELECTROSTATIC PRECIPITATOR
  16      PLANT DOWNTIME DATA

ENTER DATA SHEET NUMBER FROM THE ABOVE LIST 1
```

FIGURE A-7

```
IS THIS ANALYST WORK SHEET DATA FOR K, CK, CN OR PST
ENTER Y OR N   Y

INSERT THE DATA TAPE INTO UNIT 4924

ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11

ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON

IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)


BEGIN DATA ENTRY FROM ANALYST WORK SHEET 01
ENTER PAGE NUMBER XX

ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX

ENTER AGENT XX

ENTER SERIAL NUMBER X

ENTER CONTROL NUMBER XXXXXN

ENTER CALIBRATION STD. CONC.  XX.XXX

ENTER PEAK HEIGHT XXX.XX

ENTER AGENT CONCENTRATION  XXX.XX

ENTER DILUTION  XXXX.X

ENTER BUBBLER VOLUME  XXXX.X

ENTER CONCENTRATION(/SAMPLE)  XXX.XX

ENTER ANALYSIS TIME XXXX

ENTER INITIALS XXX


BEGIN DATA ENTRY FROM LAB COORDINATOR WORK SHEET 08
ENTER THE CONTROL NUMBER (AAAAAN)
XXXXXN

IS THIS REANALYSIS DATA?  (ENTER Y OR N)
ENTER PAGE NUMBER XX

ENTER SET TYPE XXXX

ENTER LOCATION XX

ENTER PURPOSE XX

ENTER START TIME XXXX

ENTER STOP TIME XXXX

ENTER AIRFLOW  XXXX.X

ENTER CONTROL CONCENTRATION  X.XXX

ENTER AIR SAMPLE CONCENTRATION  XXX.XXXX

IS THERE AN ANALYST'S COMMENT?  (ENTER Y OR N)   N

IS THERE A LAB. DATA COORD. COMMENT?  (ENTER Y OR N)   N

MORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)   Y
```

FIGURE A-8

```
DATA ENTRY PROGRAM FOR MIRAN 80
INSERT THE OUTPUT DATA TAPE INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE  11
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON
IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y
ENTER PAGE NUMBER XX
ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX
ENTER SERIAL NUMBER OF MIRAN X
ENTER SET TYPE XXXX
ENTER LOCATION XX
ENTER PURPOSE XX
ENTER START TIME XXXX
ENTER STOP TIME XXXX
ENTER CHLOROPICRIN - 1 HOUR AVERAGE XXXX.XX
ENTER CHLOROPICRIN - PEAK XXXX.XX
ENTER INITIALS XXX
ENTER PHOSGENE - 1 HOUR AVERAGE XXXX.XX
ENTER PHOSGENE - PEAK XXXX.XX


ENTER INITIALS XXX
ENTER CHLOROFORM - 1 HOUR AVERAGE XXXX.XX
ENTER CHLOROFORM - PEAK XXXX.XX
ENTER INITIALS XXX

IS THERE A COMMENT?  (ENTER Y OR N)
MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)
```

FIGURE A-9

```
IS THIS BLDG 1611 RECEIPT INSPECTION DATA? (ENTER Y OR N) Y
INSERT THE DATA TAPE INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON
IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y
ENTER PAGE NUMBER XX
ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX
ENTER SET TYPE XXXX
ENTER SET NUMBER XXXX
ENTER ACTION - IF DESTROYED ENTER AN X
X
ENTER COMMENT (43 CHARACTERS OR LESS)

IS THERE ANOTHER COMMENT?  (ENTER Y OR N)  N
MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)  N
PROGRAM FINISHED
```

FIGURE A-10

```
IS THIS PROCESS DATA (DISASSEMBLY ROOM)?  (ENTER Y OR N) Y
INSERT THE DATA TAPE INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON
IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y
ENTER PAGE NUMBER XX
ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX
ENTER SET TYPE XXXX
ENTER STATION NUMBER XX
ENTER COMMENT (47 CHARACTERS OR LESS)

IS THERE ANOTHER COMMENT?  (ENTER Y OR N)  N
MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)  N
PROGRAM FINISHED
```

FIGURE A-11

```
IS THIS PROCESS DATA (RESIDUE AREA - PIGS)?
ENTER Y OR N    Y

INSERT THE DATA TAPE INTO UNIT 4924

ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11

ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON

IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y

ARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  Y

ENTER PAGE NUMBER XX

ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX

ENTER SET TYPE XXXX

ENTER SET NUMBER XXXX

ENTER SKID NUMBER XXXX
```

FIGURE A-12

```
IS THIS PROCESS DATA (RESIDUE AREA - DRUMS)?
ENTER Y OR N    Y

INSERT THE DATA TAPE INTO UNIT 4924

ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11

ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK   MON

IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y

ARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  Y

ENTER PAGE NUMBER XX

ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX

ENTER DRUM NUMBER XXXXX

ENTER DRUM WEIGHT XXX

ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   N

ENTER TOTAL DRUMS
```

FIGURE A-13

```
IS THIS PROCESS DATA (SPRAY DRYER)?
ENTER Y OR N   Y

INSERT THE DATA TAPE INTO UNIT 4924

ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE   11

ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON

IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y

ARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  Y

ENTER PAGE NUMBER XX

ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX

ENTER DRUM NUMBER XXXXX

ENTER DRUM WEIGHT XXX

ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   N

ENTER TOTAL DRUMS
```

FIGURE A-14

```
IS THIS PROCESS DATA (ELECTROSTATIC PRECIPITATOR)?
ENTER Y OR N   Y

INSERT THE DATA TAPE INTO UNIT 4924

ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11

ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK
MON

IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y

ARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  Y

ENTER PAGE NUMBER XX

ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX

ENTER DRUM NUMBER XXXXX

ENTER DRUM WEIGHT XXX

ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   N

ENTER TOTAL DRUMS
```

FIGURE A-15

```
IS THIS ID SETS PLANT DOWNTIME DATA?  (ENTER Y OR N)  Y
INSERT THE DATA TAPE INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  MON
IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  Y
ENTER PAGE NUMBER XX
ENTER DATE OF THE SAMPLE COLLECTION (DDMMYY) XXXXXX
ENTER START TIME XXXX
ENTER STOP TIME XXXX
ENTER SIMULTANEOUS (Y OR N) X
ENTER SUBSYSTEM NUMBER XX
ENTER PRIMARY COMPONENT NUMBER XX
ENTER SECONDARY COMPONENT NUMBER XX
ENTER DESCRIPTIVE ACTION XX
ENTER FAILURE MODE XX
ENTER CORRECTIVE ACTION XX
ENTER EFFECT ON PRODUCTION XX



ENTER COMMENT (57 CHARACTERS OR LESS)

MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)  N
PROGRAM FINISHED
```

FIGURE A-16

```
DIRECTORY FOR ID SETS DATA PRINT PROGRAMS
        VERSION 9 - 8/28/81

 DATA
SHEET #       CONTENTS
-------------------------
    1         ANALYST AND LAB COORD WORK SHEET (H,CK,CN,PS,T)
    2         ANALYST AND LAB COORD WORK SHEET (AS)
    3         ANALYST AND LAB COORD WORK SHEET (GB)
    4         ANALYST AND LAB COORD WORK SHEET (L)
    9         ANALYTICAL DATA SHEET (MIRAN 80)
   10         BLDG 1611 - RECEIPT INSPECTION
   11         PROCESS DATA - DISASSEMBLY ROOM
   12         PROCESS DATA - RESIDUE AREA (PIGS)
   13         PROCESS DATA - RESIDUE AREA (DRUMS)
   14         PROCESS DATA - SPRAY DRYER
   15         PROCESS DATA - ELECTROSTATIC PRECIPITATOR
   16         PLANT DOWNTIME DATA

ENTER DATA SHEET NUMBER
```

FIGURE A-17

```
INSERT THE DATA TAPE INTO UNIT 4924

PRESS ENTER KEY TO BEGIN
```

FIGURE A-18

```
INSERT DATA TAPE INTO EXTERNAL TAPE DRIVE
```

FIGURE A-19

```
          PROGRAM TO PRINT
PROCESS DATA SHEET - DISASSEMBLY ROOM
INSERT DATA TAPE IN UNIT 4924

DO YOU WANT TO USE THE HARD COPIER?
ENTER (Y OR N) N

ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
```

FIGURE A-20

```
PROGRAM TO PRINT?
PROCESS DATA SHEET - DECANNED PIG CONTROL
INSERT DATA TAPE IN UNIT 4924

DO YOU WANT TO USE THE HARD COPIER?
ENTER (Y OR N) N

ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE
```

FIGURE A-21

```
PROGRAM TO PRINT
PROCESS DATA SHEET - FURNACE RESIDUE CONTROL
INSERT DATA TAPE IN UNIT 4924

DO YOU WANT TO USE THE HARD COPIER?
ENTER (Y OR N) N

ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
```

FIGURE A-22

```
PROGRAM TO PRINT
PROCESS DATA SHEET - SPRAY DRYER
INSERT DATA TAPE IN UNIT 4924

DO YOU WANT TO USE THE HARD COPIER?
ENTER (Y OR N) N

ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
```

FIGURE A-23

```
PROGRAM TO PRINT
PROCESS DATA SHEET - ELECTROSTATIC PRECIPITATOR
INSERT DATA TAPE IN UNIT 4924

DO YOU WANT TO USE THE HARD COPIER?
ENTER (Y OR N) N

ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
```

FIGURE A-24

```
DO YOU WANT TO LIST
   1 - DOWNTIME DATA
   2 - NAMES CORRESPONDING TO DOWNTIME KEYS

ENTER 1 OR 2:   1

INSERT DATA TAPE IN UNIT 4924
ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11

SUBSYSTEMS

 1          POWER DISTRIBUTION
 2          SERVICE AIR
 3          POTABLE WATER
 4          STEAM AND CONDENSATE
 5          FUEL OIL
 6          PROCESS WASTE
 7          DOORS
 8          FIRE PROTECTION
 9          HVAC
10          ELECTROSTATIC PRECIP
11          SCRUBBERS
12          CONTROL ROOM
13          DEACT FURNACE
14          DECON FURNACE
15          AFTER BURNER
16          EMERGENCY POWER
17          QUENCH
18          SPRAY DRYER
19          RECEIVING & HANDLING
20          GLOVE BOX
21          DECON MODULE
22          BOX FEED
23          RESIDUE HANDLING
24          SET MOVEMENT(TSY)
25          ENVIRO MONITORING

99          ADMINISTRATIVE

COMPONENTS

 1          ACTUATOR,FEELER
 2          MOTOR
 3          PUMP
 4          VALVE
 5          BELT
 6          SEAL
 7          SHAFT
 8          CHAIN
 9          SPROCKET
10          BEARING
11          CYLINDER
12          VALVE,SOLENOID
13          RELAY
14          CONTACT
15          FUSE
16          CIRCUIT BREAKER
17          WIRING
18          SWITCH
19          CAMERA
20          CONTROLLER
21          PAN AND TILT
22          DAMPER
23          POSITIONER
24          AIR HANDLING UNIT 1
25          AIR HANDLING UNIT 2
26          AIR HANDLING UNIT 3
27          TIMER
28          HOSE
29          TRANSMITTER
30          SPRAY TREE
31          CONVEYOR
32          GEAR
33          WINDOW
34          HOT SHOE
35          INSIDE CART
36          OUTSIDE CART
37          DOOR
38          GAUGE
39          TANK
40          HOPPER
41          TRAY
42          RACK
43          HOIST
44          CABLE
45          BLOCK/HOOK
46          LIFTING DEVICE
47          PALLET
48          BURNER
49          PILOT
50          FIREYE
51          SUMP
52          PIPE
53          BOILER
54          COIL
55          TRAP
56          HEATER
57          FILTER
58          STRAINER
59          THERMOSTAT/THERMOCOU
60          LINKAGE
61          BLOWER
62          FAN
63          OVERPACK
64          GLOVES
65          SPHINCTER
66          WRENCH
67          COMPRESSOR
68          DRYER
69          HEAT EXCHANGE/COOLER
70          CONTROL PANEL
71          TV MONITOR
72          CART TOP
73          CIRCUIT BREAKER
74
75          LIGHT
76          MIRAN 80
77          BUBBLER/FILTER
78          TABLE
79          PIG SET
80          BOX SET
81          CONNECTOR/ATTACHMENT
82          LINK/TAB
83          PIN
84          ALARM
85          STAGE
86          STATION
87          VIBRATOR
88          RAPPER
89          GRID
90          SAMPLE
91          WHEEL
92          BAND
93          STACK
94          SKI
95          BATTERY
96          REGULATOR
97          BRIDGE
98          IRIS
99          OTHER
```

FIGURE A-25

DESCRIPTIVE ACTION

1	NORTH
2	SOUTH
3	EAST
4	WEST
5	NO1
6	NO2
7	NO3
8	NO4
9	NO5
10	UPPER
11	LOWER
12	HYDRAULIC
13	PNEUMATIC
14	TEMPERATURE
15	PRESSURE
16	LEVEL
17	FLOW
18	POSITION
19	FLAME
20	BRINE
21	STEAM
22	CONDENSATE
23	NATURAL GAS
24	FUEL OIL
25	LUBRICANT
26	AIR
27	WATER
28	BYPASS
29	CONTROL
30	SHUTOFF
31	SUPPLY
32	ISOLATION
33	SOLENOID
34	RELIEF
35	TRANSFER
36	AGENT
37	PIG SET
38	BOX SET
39	OVERSIZE
99	OTHER

FAILURE MODES

1	MISSING
2	NOT READY
3	WAITING
4	BURNED
5	LEAK
6	MADE
7	NOT MADE
8	BENT
9	BROKEN
10	OUT OF ADJUSTMENT
11	FLAMEOUT
12	OFF
13	ON
14	LOOSE
15	AIR IN LINE
16	JAMMED
17	STUCK
18	FALSE SIGNAL/READ
19	EMPTY
20	OUT OF STOCK
21	HUMAN ERROR
22	CAUSE UNKNOWN
23	PEGGED
24	INSPECTION
25	OFF TRACK
26	REBURN
27	DROPPED PIG
28	CHANGE TEST
29	INCOMPLETE
30	HIGH
31	LOW
32	WARPED
33	PLUGGED
34	FULL
35	FROZEN
36	DIRTY
99	OTHER

EFFECT ON OPERATION

1	DISCONTINUED
2	INTERRUPT/RESUMED
3	SLOWED
4	DELAYED START
5	NOT AFFECTED
6	CAUSED OVERTIME

CORRECTIVE ACTION

1	INVESTIGATE
2	ADJUST
3	LUBRICATE
4	REPAIR IN PLACE
5	RESET
6	REMOVE/REPAIR/REPL
7	INSTALL
8	REMOVE/REPLACE
9	RESTART
10	START BACKUP/STDBY
11	PROBLEM DISAPEARED
12	ACTION DEFERRED
13	CLEANED
14	UNJAMMED
98	NONE
99	OTHER

FIGURE A-26

```
DIRECTORY FOR PROGRAMS TO MERGE DATA
FOR TRANSMISSION TO THE UNIVAC 1108

 KEY   PROGRAM
---   -------
 1    MIRAN 80 DATA (DATA SHEET 9)
 2    INVENTORY DATA  (DATA SHEETS 10-15)

ENTER KEY FROM THE ABOVE LIST:
```

FIGURE A-27

```
DO YOU WANT TO MERGE INVENTORY DATA?  (ENTER Y OR N)  Y
INSERT THE INPUT DATA TAPE INTO THE CONSOLE
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:  WED
INSERT OUTPUT TAPE INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  11
```

FIGURE A-28

```
DIRECTORY FOR TOTALS PROGRAMS TO UPDATE
PIG AND DRUM TOTALS AND PRINT REPORTS

KEY   PROGRAM
---   -------
 1    P1 - UPDATE PROCESSED ID SET TOTALS AND PRINT
           A DAILY REPORT
 2    P2 - READ ID SET TOTALS TAPE (P1 OUTPUT) AND
           PRINT REPORTS FOR ANY PERIOD OF TIME
 3    D1 - UPDATE DRUM TOTALS AND PRINT A DAILY REPORT
 4    D2 - READ DRUM TOTALS TAPE (D1 OUTPUT) AND PRINT
           REPORTS FOR ANY PERIOD OF TIME
 5    T1 - UPDATE DOWNTIME TOTALS
 6    T2 - READ DOWNTIME TOTALS TAPE (T1 OUTPUT) AND
           PRINT REPORTS FOR ANY PERIOD OF TIME

ENTER KEY FROM THE ABOVE LIST:
```

FIGURE A-29

```
DO YOU WANT TO UPDATE ID SET TOTALS? (ENTER Y OR N) Y
DO YOU HAVE DATA TO ENTER?  (ENTER Y OR N)  Y
INSERT THE INVENTORY DATA TAPE INTO THE CONSOLE
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:   WED
INSERT OUTPUT DATA TAPE (ID SET TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  11
DO YOU NEED TO INITIALIZE THIS TAPE?  (ENTER Y OR N)  N
```

FIGURE A-30

```
DO YOU WANT TO PRINT ID SET TOTALS? (ENTER Y OR N) Y
INSERT THE INPUT DATA TAPE (ID SET TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY):  010180
ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY):  010181
```

FIGURE A-31

```
DO YOU WANT TO UPDATE DRUM TOTALS? (ENTER Y OR N) Y
DO YOU HAVE DATA TO ENTER?  (ENTER Y OR N)  Y
INSERT THE INVENTORY DATA TAPE INTO THE CONSOLE
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:   WED

INSERT OUTPUT DATA TAPE (DRUM TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  11
```

FIGURE A-32

```
DO YOU WANT TO PRINT DRUM TOTALS? (ENTER Y OR N) Y
INSERT THE INPUT DATA TAPE (DRUM TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY):  010681
ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY):  010781
```

FIGURE A-33

```
DO YOU WANT TO UPDATE DOWNTIME TOTALS? (ENTER Y OR N) Y
INSERT THE DOWNTIME DATA TAPE INTO THE CONSOLE
ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:  WED
INSERT OUTPUT DATA TAPE (DOWNTIME TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  11
```

FIGURE A-34

```
DO YOU WANT TO PRINT DOWNTIME REPORTS ? (ENTER Y OR N) Y
INSERT THE INPUT DATA TAPE (DOWNTIME TOTALS) INTO UNIT 4924
ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  11
ENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY):  010182
ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY):  020282
```

FIGURE A-35

```
        DIRECTORY FOR DOWNTIME REPORTS

KEY   PROGRAM
---   -------

 1    ALL DOWNTIME LISTED BY SUBSYSTEM
 2    CHARGEABLE DOWNTIME LISTED BY SUBSYSTEM
 3    NON-CHARGEABLE DOWNTIME LISTED BY SUBSYSTEM
 4    ALL DOWNTIME TOTALLED BY SUBSYSTEM
 5    DOWNTIME LISTED BY PRIMARY COMPONENT

ENTER KEY FROM THE ABOVE LIST:
```

FIGURE A-36

APPENDIX B

APPENDIX B

LISTING OF THE DATA ENTRY AND DATA PRINT PROGRAMS

FILE # 1

```
         1 GO TO 100
         4 GO TO 790
         8 GO TO 790

*****    100 REM *****  DIRECTORY FOR DATA ENTRY PROGRAMS
         110 REM *****  VERSION 8 - 05/03/81

         120 PAGE
         130 INIT
         140 SET KEY
         150 DIM A$(1)
         160 PRINT "DO YOU NEED DIRECTIONS FOR USING THESE PROGRAMS? (Y OR N)  ";
         170 INPUT A$
         180 IF A$<>"Y" THEN 460

         190 REM
         200 REM ********** PRINT INSTRUCTIONS **********************************

         210 PAGE
         220 PRINT "INSTRUCTIONS FOR DATA ENTRY PROGRAMS:J"
         230 PRINT " 1.  FOR THE FIRST RECORD, A NUMBER OF X'S WILL APPEAR"
         240 PRINT "     TO SHOW THE LENGTH OF EACH DATA FIELD.  FOR EXAMPLE,"
         250 PRINT "     XXXXXX REQUIRES THAT 6 OR FEWER CHARACTERS BE ENTERED.J"
         260 PRINT " 2.  AFTER THE FIRST RECORD HAS BEEN ENTERED, INSTEAD OF"
         270 PRINT "     X'S, THE PREVIOUSLY ENTERED VALUE APPEARS.  IF YOU"
         280 PRINT "     WISH TO REPEAT THIS VALUE SIMPLY PRESS THE ENTER KEY."
         290 PRINT "     IT IS NOT NECESSARY TO REENTER THE VALUE.J"
         300 PRINT " 3.  IN SOME CASES (EXAMPLE:  DATE, TIME, CONTROL NUMBER)"
         310 PRINT "     THE FIELD MUST BE COMPLETELY FILLED.J"
         320 PRINT " 4.  NUMERICAL DATA MUST CONTAIN A DECIMAL POINT.J"
         330 PRINT " 5.  SOME NUMERICAL DATA MAY BE PRECEDED BY A < OR >"
         340 PRINT "     SYMBOL.  NO + OR - SIGNS ARE ALLOWED.J"
         350 PRINT " 6.  IF AN ITEM IS MISSING ENTER:  MJ"
         360 PRINT " 7.  IF AN ITEM IS NOT APPLICABLE ENTER:  NAJ"
         370 PRINT " 8.  IF YOU MAKE AN ERROR AND WISH TO BEGIN THE RECORD"
         380 PRINT "     AGAIN PRESS USER DEFINABLE KEY #1 (UPPER LEFT),"
         390 PRINT "     REENTER DATA FROM THE BEGINNING OF THE RECORD.J"
         400 PRINT " 9.  IF YOU WISH TO EXIT FROM A PROGRAM, PRESS USER"
         410 PRINT "     DEFINABLE KEY #2 (UPPER LEFT)).JJ"
         420 PRINT "     THE PROGRAM CHECKS THE INPUT FORMATS AND WILL PROMPT"
         430 PRINT "     YOU IF YOU MAKE A MISTAKE.J"
         440 PRINT "     PRESS 'HOME PAGE' KEY TO CONTINUE"

         450 REM

*****    460 PRINT "HAS YOUR DATA TAPE BEEN LABELLED?  (ENTER Y OR N)  ";
         470 INPUT A$
         480 IF A$ <> "Y" THEN 500
         490 CHAIN 2
         500 END

         510 REM ********** PRINT DIRECTORY **********************************

*****    520 PAGE
         530 PRINT "DIRECTORY FOR IO SETS DATA ENTRY PROGRAMS:J"
         535 PRINT "VERSION 8 - 05/03/81JJJ"
         540 PRINT " DATA"
         550 PRINT "SHEET #   CONTENTS"
```

```
560 PRINT "--------   ---------"
570 PRINT "   1       ANALYST AND LAB COORD WORK SHEETS (H,CK,CN,PB,T)"
580 PRINT "   2       ANALYST AND LAB COORD WORK SHEETS (AS)"
590 PRINT "   3       ANALYST AND LAB COORD WORK SHEETS (GB)"
600 PRINT "   4       ANALYST AND LAB COORD WORK SHEETS (L)"
610 PRINT "   9       ANALYTICAL DATA SHEET (MIRAN 80)"
620 PRINT "  10       BLDG 7611 RECEIPT INSPECTION"
630 PRINT "  11       PROCESS DATA - DISASSEMBLY ROOM"
640 PRINT "  12       PROCESS DATA - RESIDUE AREA (FIGS)"
650 PRINT "  13       PROCESS DATA - RESIDUE AREA (DRUMS)"
660 PRINT "  14       PROCESS DATA - SPRAY DRYER"
670 PRINT "  15       PROCESS DATA - ELECTROSTATIC PRECIPITATOR"
680 PRINT "  16       PLANT DOWNTIME DATA"

690 REM

700 PRINT "\ENTER DATA SHEET NUMBER FROM THE ABOVE LIST   "\
710 INPUT F
720 IF F=16 THEN 770
730 IF F<5 OR F>8 THEN 750
740 F=F-4
750 FIND F#2
760 OLD
770 PRINT "\INVALID DATA SHEET NUMBER - REENTER  "\
780 GO TO 710
790 PRINT "\END OF PROGRAM"
800 END

810 REM ********** END OF PROGRAM **********
```

FILE # 2

```
          1 GO TO 100
          4 GO TO 230
          8 GO TO 1360

+++1+++   100 REM ****  PROGRAM TO LABEL DATA ENTRY TAPES          ****
          110 REM              VERSION 8 - 05/20/81
          120 REM
          130 REM              NYI STEARNS-ROGER, INC.
          140 REM ****             M. E. MARTIN                   ****

          150 INIT
          160 SET KEY
          170 DIM M(16),N(8),W(7,2),A$(1),G$(111),H$(112),K$(6),L$(127),W$(60)
          180 READ N,M,W,W$,K$
          190 N$=""
          200 N$=N$+N$
          210 N$=N$+N$
          220 PAGE
+++1+++   230 PRINT "DO YOU WANT TO LABEL A DATA TAPE?  (ENTER Y OR N)  "
          240 INPUT A$
          250 IF A$="N" THEN 1310
+++1+++   260 PRINT "PLACE TAPE CASSETTE IN UNIT 4924"
          270 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "
          280 INPUT U
          290 PRINT "IS THIS A BRAND NEW TAPE?  (ENTER Y OR N)  "
          300 INPUT A$
          310 IF A$="N" THEN 340
          320 FIND #U:0
          330 MARK #U,28:1,100000
+++1+++   340 FIND #U:0
+++2+++   350 PRINT "ENTER THE COMPLETE NAME OF THE DAY OF THE WEEK   "
          360 INPUT C$
          370 FOR I=1 TO 7
          380  B$=SEG(W$,W(I,1),W(I,2))
          390  IF C$=B$ THEN 430
          400 'NEXT I
          410 PRINT "THIS IS NOT AN ALLOWABLE DAY.  PLEASE CHECK YOUR SPELLING"
          420 GO TO 350
+++1+++   430 IF I=3 THEN 480
          440 L=LEN(B$)
          450 FOR I=L+1 TO 9
          460  B$=B$+" "
          470 NEXT I
+++1+++   480 PAGE
          490 PRINT " DATA"
          500 PRINT "SHEET #    CONTENTS"
          510 PRINT "-------    --------"
          520 PRINT "    1      ANALYST AND LAB COORD WORK SHEETS (H, CK, CN, PB)"
          530 PRINT "    2      ANALYST AND LAB COORD WORK SHEETS (AS)"
          540 PRINT "    3      ANALYST AND LAB COORD WORK SHEETS (GB)"
          550 PRINT "    4      ANALYST AND LAB COORD WORK SHEETS (L)"
          560 PRINT "    9      ANALYTICAL DATA SHEET (MIRAN 80)"
          570 PRINT " 10-15     INVENTORY DATA"
          580 PRINT "   16      PLANT DOWNTIME DATA"

          590 REM

+++1+++   600 PRINT "ENTER DATA SHEET NUMBER FROM THE ABOVE LIST  "
```

```
        610 INPUT N$
        620 N=VAL(N$)
        630 L$="KMA0000"
        640 L$=L$&B$
        650 G$=SEG(H$,1,H(N))
        660 L$=L$&G$
        670 IF N>0 AND N<17 THEN 700
        680 PRINT "JTHIS IS NOT A VALID DATA SHEET NUMBER"
        690 GO TO 600
+++1+++ 700 GO TO N OF 740,740,740,740,740,740,740,740,740
        710 GO TO N-9 OF 860,860,860,860,860,860,1010

        720 REM
        730 REM ************ LABEL FILE 1 FOR DATA SHEETS 1-9 ******************

+++9+++ 740 MARK @U,28:1,M(7)
        750 FIND @U:1
        760 IF N<5 OR N-9 THEN 800
        770 V$=SEG(K$,N-3,1)
        780 L$=REP(V$,5,1)
        790 GO TO 810
+++1+++ 800 L$=REP(N$,5,1)
+++1+++ 810 I=1
        820 GOSUB 1090
        830 GO TO 1250

        840 REM
        850 REM ************ LABEL FILES 1-6 FOR DATA SHEETS 10-15 ************

+++6+++ 860 L$=REP("1",4,1)
        870 FOR I=1 TO 6
        880  FIND @U:I
        890  MARK @U,28:1,M(I)
        900  FIND @U:I
        910  L$=SEG(L$,1,16)
        920  G$=SEG(H$,1,H(I+9))
        930  L$=L$&G$
        940  A$=SEG(K$,1,1)
        950  L$=REP(A$,5,1)
        960  GOSUB 1090
        970 NEXT I
        980 GO TO 1250

        990 REM
        1000 REM ************ LABEL FILE 1 FOR DATA SHEET 16 ******************

+++1+++ 1010 MARK @U,28:1,M(8)
        1020 FIND @U:1
        1030 L$=REP(N$,4,2)
        1040 I=1
        1050 GOSUB 1090
        1060 GO TO 1250

        1070 REM
        1080 REM ************ SUBROUTINE 1 ************************************

-----------------------------------------------------------------------------------------------

---3---  1090 IF I<>1 THEN 1180
        1100 PRINT "JTHIS LABEL IS FOR DATA SHEET #";N;" FOR ";B$
```

```
          1110 PRINT "IS THIS OK?  (ENTER Y OR N)  "$
          1120 INPUT A$
          1130 IF A$="Y" THEN 1180
          1140 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "$
          1150 INPUT A$
          1160 IF A$="Y" THEN 350
          1170 GO TO 1250
+++2+++   1180 PRINT @0,12:L$
          1200 PRINT @0,21
          1210 RETURN

          1220 REM ************ END SUBROUTINE 1 ***********************************
          1230 REM
          1240 REM ************ ANY MORE TAPES TO BE LABELLED? ********************

+++4+++   1250 PRINT "DO YOU WANT TO LABEL ANOTHER TAPE?  (ENTER Y OR N)  "$
          1260 INPUT A$
          1270 IF A$<>"Y" THEN 1300
          1280 PAGE
          1290 GO TO 260
+++1+++   1300 PRINT "NORMAL END OF PROGRAM"
+++1+++   1310 PRINT "DO YOU WANT TO ENTER DATA?  (ENTER Y OR N)  "$
          1320 INPUT A$
          1330 IF A$="N" THEN 1370
          1340 FIND 1
          1350 OLD
+++1+++   1360 PRINT "**** ABNORMAL END OF PROGRAM ****"
+++1+++   1370 END

          1380 REM
          1390 REM ************ H ARRAY (16) ***************************************

          1400 DATA 111,111,111,111,111,111,111,111,88,34,54,15,11,11,11,84

          1410 REM
          1420 REM ************ M ARRAY (8) ****************************************

          1430 DATA 50000,50000,50000,10000,10000,10000,100000,100000

          1440 REM
          1450 REM ************ W ARRAY (7,2) **************************************

          1460 DATA 1,6,8,7,16,9,26,8,35,6,42,8,51,6

          1470 REM
          1480 REM ************ W$ ARRAY (60) **************************************

          1490 DATA "MONDAY/TUESDAY/WEDNESDAY/THURSDAY/FRIDAY/SATURDAY/SUNDAY"

          1500 REM
          1510 REM ************ K$ ARRAY (6) ***************************************

          1520 DATA "012345"

          1530 REM
          1540 REM ************ END OF PROGRAM *************************************
```

FILE # 3

```
         1 GO TO 100
         4 GO TO 730
         8 GO TO 2900

+++1+++  100 REM *** DATA SHEET #1 - ANALYST WORK SHEET FOR H, CK, CN, PS, T ***
         110 REM                  #3 - LAB DATA COORDINATOR WORK SHEET
         120 REM                  DATA ENTRY - LOAD INPUT DATA TO TAPE
         130 REM                  VERSION 10 - 3/5/82
         140 REM
         150 REM                  BY:  STEARNS-ROGER, INC.
         160 REM ***                   M. E. MARTIN                          ***

         170 PAGE
         180 INIT
         190 SET KEY
         200 DIM B(23,5),C(23,2),E(23)
         210 DIM F$(68),G$(78),J$(20),K$(40),N$(1),X$(350),W$(127),Z$(127)
         220 H=0
         230 G$="
         240 G$=G$&G$
         250 H$="X XXXX.X XXX.XXXXXXXXX XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         260 I$="XX  XXXXXXXXXXXXNN XX.XXXNA     NA      XXX.XX  XXX.XX XXXX."
         270 L$=" XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXX"
         280 PRINT "DIS THIS ANALYST WORK SHEET DATA FOR H, CK, CN OR PS?"
         290 PRINT "ENTER Y OR N   ";
         300 INPUT N$
         310 IF N$="Y" THEN 340
         320 PRINT "YOU ARE USING THE WRONG DATA ENTRY PROGRAM"
         330 GO TO 2900
+++1+++  340 READ B,C,E,F$,Y$
         350 F$=F$&Y$
         360 READ J$,K$
         370 READ X$
         380 FOR I=1 TO 6
         390  READ Y$
         400  X$=X$&Y$
         410 NEXT I
         420 DELETE Y$
         430 PRINT "INSERT THE DATA TAPE INTO UNIT 4924"
         440 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
         450 INPUT U
         460 PRINT "ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  ";
         470 INPUT T$
         480 T$=SEG(T$,1,3)
         490 FIND @U:1
         500 INPUT @U,13:Z$
         510 A$=SEG(Z$,4,2)
         520 B$=SEG(Z$,8,3)
         530 C$=SEG(Z$,8,9)
         540 IF A$="01" AND B$=T$ THEN 580
         550 PRINT "THIS IS THE WRONG DATA TAPE"
         560 PRINT "THIS TAPE IS FOR DATA SHEET #"&A$&" FOR "&C$
         570 GO TO 2900
+++1+++  580 PRINT "IS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
         590 INPUT N$
         600 IF N$="Y" THEN 690
         610 IF U=33 THEN 660
+++1+++  620 INPUT @U,6:T
```

```
          630 IF T=1 THEN 690
          640 INPUT @U,13:Z$
          650 GO TO 620
+++2+++   660 IF TYP(0)=1 THEN 690
          670 INPUT @U,13:Z$
          680 GO TO 660
+++3+++   690 Z$="RHA0110"&I$
          700 Z$=Z$&H$

          710 REM
          720 REM ************ BEGIN DATA INPUT ************************************

+++2+++   730 PAGE
+++1+++   740 PRINT "JBEGIN DATA ENTRY FROM ANALYST WORK SHEET #1"
          750 I1=1
          760 I2=13
+++2+++   770 C1=0
          780 00=0
          790 FOR I=I1 TO I2
          800  IF I>11 OR 00=0 OR I<8 THEN 830
          810  V$="NA"
          820  GO TO 970
+++1+++   830  IF I<>23 THEN 850
          840  IF N=0 THEN 1060
+++1+++   850  D$=SEG(X$,C(I,1),C(I,2))
          860  C$=SEG(Z$,B(I,1),B(I,2))
          870  PRINT "ENTER "&D$&" "&C$
+++1+++   880  INPUT V$
          890  IF V$="" THEN 1060
          900  Z1=LEN(V$)
          910  IF Z1>B(I,2) THEN 3040
          920  IF V$=" " THEN 1350
          930  IF V$<>"M" THEN 960
          940  V$="MISSING"
          950  GO TO 1050
+++1+++   960  IF V$<>"NA" THEN 1010
+++1+++   970  FOR K1=3 TO B(I,2)
          980   V$=V$&" "
          990  NEXT K1
          1000  GO TO 1050
+++1+++   1010  IF I<>6 THEN 1030
          1020  00=1
+++1+++   1030  GO TO B(I,3) OF 1350,1410,1550,1570,1850,1920,2090,2190,2280,2330
          1040  IF LEN(V$)<>B(I,2) THEN 3000
+++15++   1050  Z$=REP(V$,B(I,1),B(I,2))
+++2+++   1060 NEXT I
          1070 IF I2=23 THEN 2410
          1080 I1=14
          1090 I2=23
          1100 PAGE
          1110 A$=SEG(Z$,21,3)
          1120 IF A$<>"CAL" THEN 1170
          1130 A$=SEG(Z$,8,2)
          1140 Z$=REP(A$,10,2)
          1150 Z$=REP(Z$,70,30)
          1160 GO TO 2410
+++1+++   1170 A$=SEG(Z$,21,6)
          1180 PRINT "JBEGIN DATA ENTRY FROM LAB COORDINATOR WORK SHEET #5"
+++1+++   1190 PRINT "ENTER THE CONTROL NUMBER (AAANNN)"
          1200 INPUT B$
```

```
         1210 IF B$=A$ THEN 1240
         1220 PRINT "YOU SHOULD BE ENTERING DATA FOR ";A$
         1230 GO TO 1190
+++1+++  1240 A$=SEG(Z$,B,2)
         1250 Z$=REP(A$,10,2)
         1260 PRINT "IS THIS REANALYSIS DATA?  (ENTER Y OR N)  ";
         1270 INPUT N$
         1280 IF N$<>"Y" THEN 770
         1290 N=1
         1300 Z$=REP("30",6,2)
         1310 Z$=REP("XXXXXX",12,6)
         1320 GO TO 770

         1330 REM
         1340 REM ************ CHECK NO. 1 - LEFT ZERO FILL *********************

+++2+++  1350 IF Z1=B(I,2) THEN 1050
         1360 FOR K=Z1+1 TO B(I,2)
         1370  V$="0"+V$
         1380 NEXT K
         1390 GO TO 1050

         1400 REM ************ CHECK NO. 2 -LIMITS *********************************

+++1+++  1410 IF Z1<>B(I,2) THEN 3000
         1420 FOR K=1 TO Z1
         1430  E$=SEG(V$,K,1)
         1440  E1=ASC(E$)
         1450  IF E1>47 AND E1<58 THEN 1480
         1460  PRINT "THIS ENTRY MUST BE NUMERIC"
         1470  GO TO 1520
+++1+++  1480 NEXT K
         1490 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 1510
         1500 GO TO 1050
+++1+++  1510 PRINT D$;" MUST BE IN THE RANGE OF ";B(I,4);" TO ";B(I,5)
+++13++  1520 PRINT "REENTER ";D$;" ";C$
         1530 GO TO 880

         1540 REM ************ CHECK NO. 3 - NOT USED

+++1+++  1550 GO TO 1050

         1560 REM ************ CHECK NO. 4 - LINE UP DECIMAL POINTS *************

+++1+++  1570 Q$=SEG(V$,1,1)
         1580 IF Q$="<" OR Q$=">" THEN 1620
+++1+++  1590 V$=" "+V$
         1600 Z1=Z1+1
         1610 IF Z1>B(I,2) THEN 1800
+++1+++  1620 J=POS(V$,".",1)
         1630 IF J=0 THEN 1820
         1640 J1=Z1-J
         1650 K1=E(I)
         1660 IF J1>K1 THEN 1780
         1670 IF J1=K1 THEN 1720
         1680 FOR K=J1+1 TO K1
         1690  V$=V$+"0"
         1700 NEXT K
         1710 Z1=LEN(V$)
+++1+++  1720 IF Z1=B(I,2) THEN 1050
```

```
          1730 IF Z1>B(I,2) THEN 1800
          1740 FOR K=Z1+1 TO B(I,2)
          1750  V$=REP(" ",2,0)
          1760 NEXT K
          1770 GO TO 1050
+++1+++   1780 PRINT "ONLY ";K1;" DECIMAL FIGURES ARE ALLOWED"
          1790 GO TO 1520
+++2+++   1800 PRINT "THIS NUMBER HAS TOO MANY FIGURES"
          1810 GO TO 1520
+++1+++   1820 PRINT "THIS NUMBER HAS NO DECIMAL POINT"
          1830 GO TO 1520

          1840 REM ************ CHECK NO. 5 - CHECK FOR < AND > ******************

+++1+++   1850 IF Z1>B(I,2) THEN 3040
          1860 Q$=SEG(V$,1,1)
          1870 IF Q$="<" OR Q$=">" THEN 1890
          1880 GO TO 1590
+++1+++   1890 PRINT "NO < OR > IS ALLOWED WITH THIS VALUE"
          1900 GO TO 1520

          1910 REM ************ CHECK NO. 6 - CONTROL NUMBER FORMAT ***************

+++1+++   1920 IF Z1<>B(I,2) THEN 3000
          1930 FOR K=1 TO 6
          1940  E$=SEG(V$,K,1)
          1950  E1=ASC(E$)
          1960  IF E1<65 OR E1>90 THEN 2000
          1970  IF K<5 THEN 2030
          1980  PRINT "CHARACTER NUMBER ";K;" MUST BE NUMERIC"
          1990  GO TO 1520
+++1+++   2000  IF K>4 AND E1>47 AND E1<58 THEN 2030
          2010  PRINT "CHARACTER NUMBER ";K;" MUST BE ALPHABETIC"
          2020  GO TO 1520
+++2+++   2030 NEXT K
          2040 E$=SEG(V$,1,3)
          2050 IF E$<>"CAL" THEN 1050
          2060 C1=1
          2070 GO TO 1050

          2080 REM ************ CHECK NO. 7 - CHECK SET TYPE ********************

+++1+++   2090 IF Z1<>B(I,2) THEN 3000
          2100 K4=1
          2110 FOR K=1 TO 17
          2120  S$=SEG(F$,K4,4)
          2130  IF V$=S$ THEN 1050
          2140  K4=K4+4
          2150 NEXT K
          2160 PRINT V$;" IS NOT A VALID SET TYPE"
          2170 GO TO 1520

          2190 REM ************ CHECK NO. 8 - LOCATION ****************************

+++1+++   2190 K2=1
          2200 FOR K=1 TO 20
          2210  S$=SEG(K$,K2,2)
          2220  IF V$=S$ THEN 1050
          2230  K2=K2+2
          2240 NEXT K
```

```
          2250 PRINT V$;" IS NOT A VALID LOCATION"
          2260 GO TO 1520

          2270 REM ************ CHECK NO. 9 - PURPOSE ***************************

+++1+++   2280 IF V$="PL" OR V$="QP" OR V$="QL" OR V$="CA" THEN 1050
          2290 PRINT V$;" IS NOT A VALID PURPOSE CODE"
          2300 GO TO 1520

          2310 REM
          2320 REM ************ CHECK NO. 10 - ACCEPTABLE CHEMICAL AGENTS *******

+++1+++   2330 IF V$<>"H" AND V$<>"T" THEN 2360
          2340 V$=V$+" "
          2350 GO TO 1050
+++1+++   2360 IF V$="CK" OR V$="CN" OR V$="PS" THEN 1050
          2370 PRINT D$;" MUST BE H, CK, CN OR PS"
          2380 GO TO 1520

          2390 REM
          2400 REM ************ WRITE RECORD TO TAPE AND CHECK FOR COMMENTS *****

+++2+++   2410 Z1=LEN(Z$)
          2420 IF Z1<>127 THEN 2960
          2430 PRINT @41;Z$
          2440 PRINT @0,12;Z$
          2450 PRINT "DIS THERE AN ANALYST'S COMMENT?  (ENTER Y OR N)   ";
          2460 INPUT N$
          2470 IF N$<>"Y" THEN 2760

          2480 REM
          2490 REM ************ PROCESS COMMENTS ***********************************

          2500 N=1
          2510 I$="ANALYST'S"
+++2+++   2520 A$=SEG(J$,N,2)
          2530 U$=Z$
          2540 W$=REP(A$,6,2)
          2550 W$=REP(C$,34,78)
+++1+++   2560 PRINT "DENTER COMMENT (72 CHARACTERS OR LESS)"
          2570 INPUT C$
          2580 Z1=LEN(C$)
          2590 IF Z1<=72 THEN 2620
          2600 PRINT "DTHIS COMMENT IS TOO LONG"
          2610 GO TO 2560
+++1+++   2620 W$=REP(C$,34,Z1)
          2630 Z1=LEN(W$)
          2640 IF Z1<>127 THEN 2960
          2650 PRINT @41;W$
          2660 PRINT @0,12;W$
          2670 IF N=9 THEN 2760
          2680 IF N=19 THEN 2840
          2690 PRINT "DIS THERE ANOTHER ";I$;" COMMENT?  (ENTER Y OR N)   ";
          2700 INPUT N$
          2710 N=N+2
          2720 IF N$="Y" THEN 2520

          2730 REM
          2740 REM ************ MORE COMMENTS **********************************
```

```
          2750 IF N>10 THEN 2840
+++2+++   2760 PRINT "JIS THERE A LAB. DATA COORD. COMMENT?  (ENTER Y OR N)   "|
          2770 INPUT N$
          2780 IF N$<>"Y" THEN 2840
          2790 N=11
          2800 I$="LAB. DATA COORD."
          2810 GO TO 2520

          2820 REM
          2830 REM ************* CHECK END OF DATA **********************************

+++3+++   2840 M=0
          2850 Z$=REP("10",6,2)
          2860 PRINT "JMORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)   "|
          2870 INPUT N$
          2880 IF N$<>"N" THEN 730
          2890 GO TO 2920
+++3+++   2900 PRINT "J**** ABNORMAL PROGRAM END ****"
          2910 GO TO 2930
+++1+++   2920 PRINT "JNORMAL PROGRAM END"
+++1+++   2930 PRINT @0,2;
          2940 END

          2950 REM ************* DIAGNOSTIC MESSAGES **********************************

+++2+++   2960 PRINT "ERROR IN LENGTH OF Z$"
          2970 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          2980 GO TO 740

          2990 REM

+++4+++   3000 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY "|B(I,2)|
          3010 PRINT " CHARACTERS"
          3020 GO TO 1520

          3030 REM

+++2+++   3040 PRINT D$|" CANNOT BE LONGER THAN "|B(I,2)|" CHARACTERS"
          3050 GO TO 1520

          3060 REM
          3070 REM ************* B ARRAY (23,5) **********************************

          3080 DATA 8,2,1,0,0,12,6,0,0,0,18,2,10,0,0,20,1,2,1,6
          3090 DATA 21,6,6,0,0,27,7,5,0,0,48,7,4,0,0,55,7,4,0,0
          3100 DATA 62,7,4,0,0,69,7,5,0,0,76,7,4,0,0,83,4,2,0,2400,87,3,0,0,0
          3110 DATA 10,2,1,0,0,112,4,7,0,0,116,2,8,0,0,118,2,9,0,0
          3120 DATA 120,4,2,0,2400,124,4,2,0,2400,90,7,5,0,0
          3130 DATA 97,6,5,0,0,103,9,4,0,0,12,6,0,0,0

          3140 REM
          3150 REM ************* C ARRAY (23,2) **********************************

          3160 DATA 1,11,13,38,52,5,57,13,71,14,86,22,108,11,120,19
          3170 DATA 140,8,149,14,163,22,186,13,200,8
          3180 DATA 211,11,222,8,231,8,240,7,248,10,259,9,268,7,276,21,298,24
          3190 DATA 322,15

          3200 REM
          3210 REM ************* E ARRAY (23) **********************************
```

```
3220 DATA 0,0,0,0,0,3,2,2,1,1,2,0,0,0,0,0,0,0,0,1,3,4,0

3230 REM
3240 REM ********** F% ARRAY (68) ************************************

3250 DATA "K9-1K942K945K951K952K953K954K955"
3260 DATA "X302X545X546X547X548X549X550X551X552"

3270 REM
3280 REM ************ J% ARRAY (20) AND K% ARRAY (40) ******************

3290 DATA "20212223242526272829"
3300 DATA "DRSTCRRADEDCCVHOHREXENAABEAESSSWSELAOTDS"

3310 REM
3320 REM ************** X% ARRAY (350) ***********************************

3330 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)/AGENT"
3340 DATA "SERIAL NUMBER/CONTROL NUMBER/CALIBRATION STD. CONC."
3350 DATA "PEAK HEIGHT/AGENT CONCENTRATION/DILUTION/BUBBLER VOLUME"
3360 DATA "CONCENTRATION(/SAMPLE)/ANALYSIS TIME/INITIALS***PAGE NUMBER"
3370 DATA "SET TYPE/LOCATION/PURPOSE/START TIME/STOP TIME"
3380 DATA "AIRFLOW/CONTROL CONCENTRATION/AIR SAMPLE CONCENTRATION"
3390 DATA "REANALYSIS DATE"

3400 REM
3410 REM ************ END OF PROGRAM ***********************************
```

FILE # 4

```
         1 GO TO 100
         4 GO TO 730
         8 GO TO 2800

****1*** 100 REM ***# DATA SHEET #2 - ANALYST WORK SHEET FOR AS            ####
         110 REM                  #6 - LAB DATA COORDINATOR WORK SHEET
         120 REM                  DATA ENTRY - LOAD INPUT DATA TO TAPE
         130 REM                  VERSION 9 - 10/29/81
         140 REM
         150 REM                  BY:  STEARNS-ROGER, INC.
         160 REM ####                  M. E. MARTIN                        ####

         170 PAGE
         180 INIT
         190 SET KEY
         200 DIM B(22,5),C(22,2),E(22)
         210 DIM F$(68),G$(78),J$(20),K$(38),N$(1),X$(350),W$(127),Z$(127)
         220 M=0
         230 G$=" "
         240 G$=G$&G$
         250 H$="X XXXX.X XXX.XXXXXXXXX XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         260 I$="XX  XXXXXXL XXXXXNN XX.XXXNA     NA      XX.XXX XXX.XX XXXX."
         270 L$=" XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         280 PRINT "DIS THIS ANALYST WORK SHEET DATA FOR AS?  (ENTER Y OR N)  "$

         290 REM

         300 INPUT N$
         310 IF N$="Y" THEN 340
         320 PRINT "?YOU ARE USING THE WRONG DATA ENTRY PROGRAM"
         330 GO TO 2800
****1*** 340 READ B,C,E,F$,Y$
         350 F$=F$&Y$
         360 READ J$,K$
         370 READ X$
         380 FOR I=1 TO 6
         390  READ Y$
         400  X$=X$&Y$
         410 NEXT I
         420 DELETE Y$
         430 PRINT "?INSERT THE DATA TAPE INTO UNIT 4924"
         440 PRINT "?ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "$
         450 INPUT U
         460 PRINT "?ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  "$
         470 INPUT T$
         480 T$=SEG(T$,1,3)
         490 FIND @U:1
         500 INPUT @U:I3:Z$
         510 A$=SEG(Z$,4,2)
         520 B$=SEG(Z$,8,3)
         530 T$=SEG(Z$,8,9)
         540 IF A$="02" AND B$=T$ THEN 580
         550 PRINT "?THIS IS THE WRONG DATA TAPE"
         560 PRINT "?THIS TAPE IS FOR DATA SHEET #"A$" FOR "C$
         570 GO TO 2800
****1*** 580 PRINT "DIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  "$
         590 INPUT N$
         600 IF N$="Y" THEN 670
```

```
          610 IF U=33 THEN 660
+++1+++   620 INPUT @U,6;T
          630 IF T=1 THEN 690
          640 INPUT @U,13;Z$
          650 GO TO 620
+++2+++   660 IF TYP(0)=1 THEN 690
          670 INPUT @U,13;Z$
          680 GO TO 660
+++3+++   690 Z$="RMA0210"&I$
          700 Z$=Z$&H$

          710 REM
          720 REM ***********  BEGIN DATA INPUT  ************************************

+++2+++   730 PAGE
+++1+++   740 PRINT "BEGIN DATA ENTRY FROM ANALYST WORK SHEET #2"
          750 I1=1
          760 I2=12
+++2+++   770 C1=0
          780 O0=0
          790 FOR I=I1 TO I2
          800  IF I>10 OR O0=0 OR I<7 THEN 830
          810  V$="NA"
          820  GO TO 970
+++1+++   830  IF I<>22 THEN 850
          840  IF M=0 THEN 1060
+++1+++   850  D$=SEG(X$,C(I,1),C(I,2))
          860  C$=SEG(Z$,B(I,1),B(I,2))
          870  PRINT "ENTER ";D$;" ";C$
+++1+++   880  INPUT V$
          890  IF V$="" THEN 1060
          900  Z1=LEN(V$)
          910  IF Z1<B(I,2) THEN 2940
          920  IF V$=" " THEN 1350
          930  IF V$<>"M" THEN 960
          940  V$="MISSING"
          950  GO TO 1050
+++1+++   960  IF V$<>"NA" THEN 1010
+++1+++   970  FOR A1=3 TO B(I,2)
          980   V$=V$&" "
          990  NEXT A1
          1000  GO TO 1050
+++1+++   1010  IF I<>5 THEN 1030
          1020  O0=1
+++1+++   1030  GO TO B(I,3) OF 1350,1410,1550,1550,1830,1900,2070,2170,2240
          1040  IF LEN(V$)<>B(I,2) THEN 2900
+++2+++   1050  Z$=REP(V$,B(I,1),B(I,2))
+++2+++   1060 NEXT I
          1070 IF I=22 THEN 2310
          1080 I1=13
          1090 I2=22
          1100 PAGE
          1110 A$=SEG(Z$,21,3)
          1120 IF A$="COM" THEN 1170
          1130 A1=SEG(Z$,8,2)
          1140 Z$=REP(A$,10,2)
          1150 Z$=REP(A1,90,38)
          1160 GO TO 2310
+++1+++   1170 A$=SEG(Z$,21,6)
          1180 PRINT "BEGIN DATA ENTRY FROM LAB COORDINATOR WORK SHEET #6"
```

```
+++1+++  1190 PRINT "ENTER THE CONTROL NUMBER (AAAANNN)"
         1200 INPUT B$
         1210 IF B$=A$ THEN 1240
         1220 PRINT "YOU SHOULD BE ENTERING DATA FOR "A$
         1230 GO TO 1190
+++1+++  1240 A$=SEG(Z$,8,2)
         1250 Z$=REP(A$,10,2)
         1260 PRINT "IS THIS REANALYSIS DATA?  (ENTER Y OR N)  "
         1270 INPUT N$
         1280 IF N$<>"Y" THEN 770
         1290 M=1
         1300 Z$=REP("30",6,2)
         1310 Z$=REP("XXXXXX",12,6)
         1320 GO TO 770

         1330 REM
         1340 REM ************ CHECK NO. 1 - LEFT ZERO FILL **********************

+++2+++  1350 IF Z1=B(I,2) THEN 1050
         1360 FOR K=Z1+1 TO B(I,2)
         1370  V$="0"+V$
         1380 NEXT K
         1390 GO TO 1050

         1400 REM ************ CHECK NO. 2 -LIMITS ******************************

+++1+++  1410 IF Z1<>B(I,2) THEN 2900
         1420 FOR K=1 TO Z1
         1430  E$=SEG(V$,K,1)
         1440  E1=ASC(E$)
         1450  IF E1>47 AND E1<58 THEN 1480
         1460  PRINT "THIS ENTRY MUST BE NUMERIC"
         1470  GO TO 1520
+++1+++  1480 NEXT K
         1490 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 1510
         1500 GO TO 1050
+++1+++  1510 PRINT D$;" MUST BE IN THE RANGE OF "B(I,4)" TO "B(I,5)
+++12++  1520 PRINT "REENTER "D$" "C$
         1530 GO TO 880

         1540 REM ************ CHECK NO. 4 - LINE UP DECIMAL POINTS *************

+++2+++  1550 Q$=SEG(V$,1,1)
         1560 IF Q$="<" OR Q$=">" THEN 1600
+++1+++  1570 V$=" "+V$
         1580 Z1=Z1+1
         1590 IF Z1>B(I,2) THEN 1780
+++1+++  1600 J=POS(V$,".",1)
         1610 IF J=0 THEN 1600
         1620 J1=Z1-J
         1630 K1=E(I)
         1640 IF J1>K1 THEN 1760
         1650 IF J1=K1 THEN 1700
         1660 FOR K=J1+1 TO K1
         1670  V$=V$+"0"
         1680 NEXT K
         1690 Z1=LEN(V$)
+++1+++  1700 IF Z1=B(I,2) THEN 1050
         1710 IF Z1>B(I,2) THEN 1780
         1720 FOR K=Z1+1 TO B(I,2)
```

```
         1730  V$=REP(" ",2,0)
         1740 NEXT K
         1750 GO TO 1050
+++1+++  1760 PRINT "ONLY "|K1|" DECIMAL FIGURES ARE ALLOWED"
         1770 GO TO 1520
+++2+++  1780 PRINT "THIS NUMBER HAS TOO MANY FIGURES"
         1790 GO TO 1520
+++1+++  1800 PRINT "THIS NUMBER HAS NO DECIMAL POINT"
         1810 GO TO 1520

         1820 REM ************ CHECK NO. 5 - CHECK FOR < AND > ********************

+++1+++  1830 IF Z1>B(I,2) THEN 2940
         1840 Q$=SEG(V$,1,1)
         1850 IF Q$="<" OR Q$=">" THEN 1870
         1860 GO TO 1570
+++1+++  1870 PRINT "NO < OR >  S ALLOWED WITH THIS VALUE"
         1880 GO TO 1520

         1890 REM ************ CHECK NO. 6 - CONTROL NUMBER FORMAT ***************

+++1+++  1900 IF Z1<>B(I,2) THEN 2900
         1910 FOR K=1 TO 6
         1920  E$=SEG(V$,K,1)
         1930  E1=ASC(E$)
         1940  IF E1<65 OR E1>90 THEN 1980
         1950  IF K<5 THEN 2010
         1960  PRINT "CHARACTER NUMBER "|K|" MUST BE NUMERIC"
         1970  GO TO 1520
+++1+++  1980  IF K>4 AND E1>47 AND E1<58 THEN 2010
         1990  PRINT "CHARACTER NUMBER "|K|" MUST BE ALPHABETIC"
         2000  GO TO 1520
+++2+++  2010 NEXT K
         2020 E$=SEG(V$,1,3)
         2030 IF E$<>"CAL" THEN 1050
         2040 C1=1
         2050 GO TO 1050

         2060 REM ************ CHECK NO. 7 - CHECK SET TYPE **********************

+++1+++  2070 IF Z1<>B(I,2) THEN 2900
         2080 K4=1
         2090 FOR K=1 TO 17
         2100  S$=SEG(F$,K4,4)
         2110  IF V$=S$ THEN 1050
         2120  K4=K4+4
         2130 NEXT K
         2140 PRINT V$|" IS NOT A VALID SET TYPE"
         2150 GO TO 1520

         2160 REM ************ CHECK NO. 8 - LOCATION ****************************

+++1+++  2170 K2=1
         2180 FOR K=1 TO 19
         2190  S$=SEG(N$,K2,2)
         2200  IF V$=S$ THEN 1050
         2210  K2=K2+2
         2220 NEXT K
         2230 PRINT V$|" IS NOT A VALID LOCATION"
         2240 GO TO 1520
```

```
         2250 REM ************ CHECK NO. 9 - PURPOSE ***************************

+++1+++  2260 IF V$="PL" OR V$="QP" OR V$="QL" OR V$="CA" THEN 1050
         2270 PRINT V$;" IS NOT A VALID PURPOSE CODE"
         2280 GO TO 1520

         2290 REM
         2300 REM ************ WRITE RECORD TO TAPE AND CHECK FOR COMMENTS *****

+++2+++  2310 Z1=LEN(Z$)
         2320 IF Z1<>127 THEN 2860
         2330 PRINT @41;Z$
         2340 PRINT @0,12;Z$
         2350 PRINT "DIS THERE AN ANALYST'S COMMENT?  (ENTER Y OR N)   ";
         2360 INPUT N$
         2370 IF N$<>"Y" THEN 2660

         2380 REM
         2390 REM ************ PROCESS COMMENTS ********************************

         2400 N=1
         2410 I$="ANALYST'S"
+++2+++  2420 A$=SEG(J$,N,2)
         2430 W$=Z$
         2440 W$=REP(A$,6,2)
         2450 W$=REP(G$,34,78)
+++1+++  2460 PRINT "DENTER COMMENT (72 CHARACTERS OR LESS)"
         2470 INPUT C$
         2480 Z1=LEN(C$)
         2490 IF Z1<=72 THEN 2520
         2500 PRINT "DTHIS COMMENT IS TOO LONG"
         2510 GO TO 2460
+++1+++  2520 W$=REP(C$,34,Z1)
         2530 Z1=LEN(W$)
         2540 IF Z1<>127 THEN 2860
         2550 PRINT @41;W$
         2560 PRINT @0,12;W$
         2570 IF N=9 THEN 2660
         2580 IF N=19 THEN 2740
         2590 PRINT "DIS THERE ANOTHER ";I$;" COMMENT?  (ENTER Y OR N)   ";
         2600 INPUT N$
         2610 N=N+2
         2620 IF N$="Y" THEN 2420

         2630 REM
         2640 REM ************ MORE COMMENTS ***********************************

         2650 IF N>10 THEN 2740
+++2+++  2660 PRINT "DIS THERE A LAB. DATA COORD. COMMENT?  (ENTER Y OR N)   ";
         2670 INPUT N$
         2680 IF N$<>"Y" THEN 2740
         2690 N=11
         2700 I$="LAB. DATA COORD."
         2710 GO TO 2420

         2720 REM
         2730 REM ************ CHECK END OF DATA ********************************

+++3+++  2740 N=0
```

```
          2750 Z$=REP("10",6,2)
          2760 PRINT "JMORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)    ";
          2770 INPUT N$
          2780 IF N$<>"N" THEN 730
          2790 GO TO 2820
+++3+++   2800 PRINT "J**** ABNORMAL PROGRAM END ****"
          2810 GO TO 2830
+++1+++   2820 PRINT "JNORMAL PROGRAM END"
+++1+++   2830 PRINT @0,2;
          2840 END

          2850 REM ************ DIAGNOSTIC MESSAGES *********************************

+++2+++   2860 PRINT "ERROR IN LENGTH OF Z$"
          2870 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          2880 GO TO 740

          2890 REM

+++4+++   2900 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
          2910 PRINT " CHARACTERS"
          2920 GO TO 1520

          2930 REM

+++2+++   2940 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
          2950 GO TO 1520

          2960 REM
          2970 REM ************ B ARRAY (22,5) ***********************************

          2980 DATA 8,2,1,0,0,12,6,0,0,0,20,1,2,1,5
          2990 DATA 21,6,6,0,0,27,7,5,0,0,48,7,4,0,0,55,7,4,0,0
          3000 DATA 62,7,4,0,0,69,7,5,0,0,76,7,4,0,0,83,4,2,0,2400,87,3,0,0,0
          3010 DATA 10,2,1,0,0,112,4,7,0,0,116,2,8,0,0,118,2,9,0,0
          3020 DATA 120,4,2,0,2400,124,4,2,0,2400,90,7,5,0,0
          3030 DATA 97,6,5,0,0,103,9,4,0,0,12,6,0,0,0

          3040 REM
          3050 REM ************ C ARRAY (22,2) ***********************************

          3060 DATA 1,11,13,38,57,13,71,14,86,22,108,11,120,19
          3070 DATA 140,8,149,14,163,22,186,13,200,8
          3080 DATA 211,11,222,8,231,8,240,7,248,10,259,9,268,7,276,21,298,24
          3090 DATA 322,15

          3100 REM
          3110 REM ************ E ARRAY (22) ************************************

          3120 DATA 0,0,0,0,3,3,2,1,1,2,0,0,0,0,0,0,0,0,1,3,4,0

          3130 REM
          3140 REM ************ F$ ARRAY (68) ***********************************

          3150 DATA "K941K942K945K951K952K953K954K955"
          3160 DATA "X302X545X546X547X548X549X550X551X552"

          3170 REM
          3180 REM ************ J$ ARRAY (20) AND K$ ARRAY (38) ******************
```

```
3190 DATA "20212223242526272829"
3200 DATA "DRSTLRRADEDCCVHOHRFXFNAABEAESSSWSELAOT"

3210 REM
3220 REM ************** X$ ARRAY (350) ***********************************

3230 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)       "
3240 DATA "SERIAL NUMBER/CONTROL NUMBER/CALIBRATION STD. CONC."
3250 DATA "PEAK HEIGHT/AGENT CONCENTRATION/DILUTION/BUBBLER VOLUME"
3260 DATA "CONCENTRATION(/SAMPLE)/ANALYSIS TIME/INITIALS***PAGE NUMBER"
3270 DATA "SET TYPE/LOCATION/PURPOSE/START TIME/STOP TIME"
3280 DATA "AIRFLOW/CONTROL CONCENTRATION/AIR SAMPLE CONCENTRATION"
3290 DATA "REANALYSIS DATE"

3300 REM
3310 REM ************* END OF PROGRAM ***************************************
```

FILE # 5

```
         1 GO TO 100
         4 GO TO 730
         8 GO TO 2800

+++1+++  100 REM **** DATA SHEET #3 - ANALYST WORK SHEET FOR GB            ****
         110 REM                #7 - LAB DATA COORDINATOR WORK SHEET
         120 REM                DATA ENTRY - LOAD INPUT DATA TO TAPE
         130 REM                VERSION 9 - 10/29/81
         140 REM
         150 REM                BY:  STEARNS-ROGER, INC.
         160 REM ****                 M. E. MARTIN                        ****

         170 PAGE
         180 INIT
         190 SET KEY
         200 DIM B(22,5),C(22,2),E(22)
         210 DIM F$(72),G$(78),J$(20),K$(38),N$(1),X$(350),W$(127),Z$(127)
         220 M=0
         230 G$=" "
         240 G$=G$&G$
         250 H$="X XXXX.X XXX.XXXXXXXXX XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         260 I$="XX  XXXXXXGBXXXXXNN XX.XXXNA     NA      XXX.XX XXX.XX XXXX."
         270 L$=" XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         280 PRINT "JIS THIS ANALYST WORK SHEET DATA FOR GB?  (ENTER Y OR N)  "!

         290 REM

         300 INPUT N$
         310 IF N$="Y" THEN 340
         320 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
         330 GO TO 2800
+++1+++  340 READ B,C,E,F$,Y$
         350 F$=F$&Y$
         360 READ J$,K$
         370 READ X$
         380 FOR I=1 TO 6
         390  READ Y$
         400  X$=X$&Y$
         410 NEXT I
         420 DELETE Y$
         430 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
         440 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "!
         450 INPUT U
         460 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  "!
         470 INPUT T$
         480 T$=SEG(T$,1,3)
         490 PRINT @U;1
         500 INPUT @U,13;Z$
         510 A$=SEG(Z$,4,2)
         520 B$=SEG(Z$,8,3)
         530 C$=SEG(Z$,8,9)
         540 IF A$="03" AND B$=T$ THEN 580
         550 PRINT "JTHIS IS THE WRONG DATA TAPE"
         560 PRINT "JTHIS TAPE IS FOR DATA SHEET #"!A$!" FOR "!C$
         570 GO TO 2800
+++1+++  580 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  "!
         590 INPUT N$
         600 IF N$="Y" THEN 690
```

```
          610 IF U=33 THEN 660
+++1+++   620 INPUT @U,61;T
          630 IF T=1 THEN 690
          640 INPUT @U,13;Z$
          650 GO TO 620
+++2+++   660 IF TYP(0)=1 THEN 690
          670 INPUT @U,13;Z$
          680 GO TO 660
+++3+++   690 Z$="RMA0310"$I$
          700 Z$=Z$&H$

          710 REM
          720 REM ************ BEGIN DATA INPUT ************************************

+++2+++   730 PAGE
+++1+++   740 PRINT "JBEGIN DATA ENTRY FROM ANALYST WORK SHEET #3"
          750 I1=1
          760 I2=12
+++2+++   770 C1=0
          780 O0=0
          790 FOR I=I1 TO I2
          800  IF I>10 OR O0=0 OR I<7 THEN 830
          810  V$="NA"
          820  GO TO 970
+++1+++   830  IF I<>22 THEN 850
          840  IF M=0 THEN 1060
+++1+++   850  D$=SEG(X$,C(I,1),C(I,2))
          860  C$=SEG(Z$,B(I,1),B(I,2))
          870  PRINT "ENTER ";D$;" ";C$
+++1+++   880  INPUT V$
          890  IF V$="" THEN 1060
          900  Z1=LEN(V$)
          910  IF Z1>B(I,2) THEN 2940
          920  IF V$=" " THEN 1350
          930  IF V$<>"M" THEN 960
          940  V$="MISSING"
          950  GO TO 1050
+++1+++   960  IF V$<>"NA" THEN 1010
+++1+++   970  FOR K1=3 TO B(I,2)
          980   V$=V$&" "
          990  NEXT K1
         1000  GO TO 1050
+++1+++  1010  IF I<>5 THEN 1030
         1020  O0=1
+++1+++  1030  GO TO B(I,3) OF 1350,1410,1550,1550,1830,1900,2070,2170,2260
         1040  IF LEN(V$)<>B(I,2) THEN 2900
+++12++  1050  Z$=REP(V$,B(I,1),B(I,2))
+++2+++  1060 NEXT I
         1070 IF I2=22 THEN 2310
         1080 I1=13
         1090 I2=22
         1100 PAGE
         1110 A$=SEG(Z$,21,3)
         1120 IF A$<>"CAL" THEN 1170
         1130 A$=SEG(Z$,8,2)
         1140 Z$=REP(A$,10,2)
         1150 Z$=REP(L$,90,38)
         1160 GO TO 2310
+++1+++  1170 A$=SEG(Z$,21,6)
         1180 PRINT "JBEGIN DATA ENTRY FROM LAB COORDINATOR WORK SHEET #7"
```

```
+++1+++  1190 PRINT "ENTER THE CONTROL NUMBER (AAANNN)"
         1200 INPUT B$
         1210 IF B$=A$ THEN 1240
         1220 PRINT "YOU SHOU'D BE ENTERING DATA FOR "$A$
         1230 GO TO 1190
+++1+++  1240 A$=SEG(Z$,6,2)
         1250 Z$=REP(A$,10,2)
         1260 PRINT "JIS THIS REANALYSIS DATA?  (ENTER Y OR N)  "$
         1270 INPUT N$
         1280 IF N$<>"Y" THEN 770
         1290 M=1
         1300 Z$=REP("30",6,2)
         1310 Z$=REP("XXXXXX",12,6)
         1320 GO TO 770

         1330 REM
         1340 REM ************ CHECK NO. 1 - LEFT ZERO FILL **********************

+++2+++  1350 IF Z1=B(I,2) THEN 1050
         1360 FOR K=Z1+1 TO B(I,2)
         1370  V$="0"$V$
         1380 NEXT K
         1390 GO TO 1050

         1400 REM ************ CHECK NO. 2 -LIMITS ********************************

+++1+++  1410 IF Z1<>B(I,2) THEN 2900
         1420 FOR K=1 TO Z1
         1430  E$=SEG(V$,K,1)
         1440  E1=ASC(E$)
         1450  IF E1>47 AND E1<58 THEN 1480
         1460  PRINT "THIS ENTRY MUST BE NUMERIC"
         1470  GO TO 1520
+++1+++  1480 NEXT K
         1490 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 1510
         1500 GO TO 1050
+++1+++  1510 PRINT D$;" MUST BE IN THE RANGE OF "$B(I,4)$" TO "$B(I,5)
+++12++  1520 PRINT "REENTER "$D$;" "$C$
         1530 GO TO 880

         1540 REM ************ CHECK NO. 4 - LINE UP DECIMAL POINTS *************

+++2+++  1550 Q$=SEG(V$,1,1)
         1560 IF Q$="<" OR Q$=">" THEN 1600
+++1+++  1570 V$=" "$V$
         1580 Z1=Z1+1
         1590 IF Z1>B(I,2) THEN 1780
+++1+++  1600 J=POS(V$,".",1)
         1610 IF J=0 THEN 1800
         1620 J1=Z1-J
         1630 K1=E(I)
         1640 IF J1>K1 THEN 1760
         1650 IF J1=K1 THEN 1700
         1660 FOR K=J1+1 TO K1
         1670  V$=V$$"0"
         1680 NEXT K
         1690 Z1=LEN(V$)
+++1+++  1700 IF Z1=B(I,2) THEN 1050
         1710 IF Z1>B(I,2) THEN 1780
         1720 FOR K=Z1+1 TO B(I,2)
```

```
         1730  V$=REP(' ',2,0)
         1740 NEXT K
         1750 GO TO 1050
+++1+++  1760 PRINT 'ONLY '#K1#' DECIMAL FIGURES ARE ALLOWED'
         1770 GO TO 1520
+++2+++  1780 PRINT 'THIS NUMBER HAS TOO MANY FIGURES'
         1790 GO TO 1520
+++1+++  1800 PRINT 'THIS NUMBER HAS NO DECIMAL POINT'
         1810 GO TO 1520

         1820 REM ************ CHECK NO. 5 - CHECK FOR < AND > ******************

+++1+++  1830 IF Z1>B(I,2) THEN 2940
         1840 Q$=SEG(V$,1,1)
         1850 IF Q$='<' OR Q$='>' THEN 1870
         1860 GO TO 1570
+++1+++  1870 PRINT 'NO < OR > IS ALLOWED WITH THIS VALUE'
         1880 GO TO 1520

         1890 REM ************ CHECK NO. 6 - CONTROL NUMBER FORMAT ***************

+++1+++  1900 IF Z1<>B(I,2) THEN 2900
         1910 FOR K=1 TO 6
         1920  E$=SEG(V$,K,1)
         1930  E1=ASC(E$)
         1940  IF E1<65 OR E1>90 THEN 1980
         1950  IF K<5 THEN 2010
         1960  PRINT 'CHARACTER NUMBER '#K#' MUST BE NUMERIC'
         1970  GO TO 1520
+++1+++  1980  IF K>4 AND E1>47 AND E1<58 THEN 2010
         1990  PRINT 'CHARACTER NUMBER '#K#' MUST BE ALPHABETIC'
         2000  GO TO 1520
+++2+++  2010 NEXT K
         2020 E$=SEG(V$,1,3)
         2030 IF E$<>'CAL' THEN 1050
         2040 C1=1
         2050 GO TO 1050

         2060 REM ************ CHECK NO. 7 - CHECK SET TYPE ********************

+++1+++  2070 IF Z1<>B(I,2) THEN 2900
         2080 K4=1
         2090 FOR K=1 TO 18
         2100  S$=SEG(F$,K4,4)
         2110  IF V$=S$ THEN 1050
         2120  K4=K4+4
         2130 NEXT K
         2140 PRINT V$#' IS NOT A VALID SET TYPE'
         2150 GO TO 1520

         2160 REM ************ CHECK NO. 8 - LOCATION ****************************

+++1+++  2170 K2=1
         2180 FOR K=1 TO 19
         2190  S$=SEG(K$,K2,2)
         2200  IF V$=S$ THEN 1050
         2210  K2=K2+2
         2220 NEXT K
         2230 PRINT V$#' IS NOT A VALID LOCATION'
         2240 GO TO 1520
```

```
          2250 REM ************ CHECK NO. 9 - PURPOSE *************************
+++1+++   2260 IF V$="PL" OR V$="QP" OR V$="QL" OR V$="CA" THEN 1050
          2270 PRINT V$;" IS NOT A VALID PURPOSE CODE"
          2280 GO TO 1520

          2290 REM
          2300 REM ************ WRITE RECORD TO TAPE AND CHECK FOR COMMENTS *****
+++2+++   2310 Z1=LEN(Z$)
          2320 IF Z1<>127 THEN 2860
          2330 PRINT @41;Z$
          2340 PRINT @0,12;Z$
          2350 PRINT "DO THERE AN ANALYST'S COMMENT?  (ENTER Y OR N)   ";
          2360 INPUT N$
          2370 IF N$<>"Y" THEN 2660

          2380 REM
          2390 REM ************ PROCESS COMMENTS ******************************

          2400 N=1
          2410 I$="ANALYST'S"
+++2+++   2420 A$=SEG(J$,N,2)
          2430 W$=Z$
          2440 W$=REP(A$,6,2)
          2450 W$=REP(G$,34,78)
+++1+++   2460 PRINT "DENTER COMMENT (72 CHARACTERS OR LESS)"
          2470 INPUT C$
          2480 Z1=LEN(C$)
          2490 IF Z1<=72 THEN 2520
          2500 PRINT "DTHIS COMMENT IS TOO LONG"
          2510 GO TO 2460
+++1+++   2520 W$=REP(C$,34,Z1)
          2530 Z1=LEN(W$)
          2540 IF Z1<>127 THEN 2860
          2550 PRINT @41;W$
          2560 PRINT @0,12;W$
          2570 IF N=9 THEN 2660
          2580 IF N=19 THEN 2740
          2590 PRINT "DO THERE ANOTHER ";I$;" COMMENT?  (ENTER Y OR N)  ";
          2600 INPUT N$
          2610 N=N+2
          2620 IF N$="Y" THEN 2420

          2630 REM
          2640 REM ************ MORE COMMENTS *********************************

          2650 IF N>10 THEN 2740
+++2+++   2660 PRINT "DO THERE A LAB. DATA COORD. COMMENT?  (ENTER Y OR N)   ";
          2670 INPUT N$
          2680 IF N$<>"Y" THEN 2740
          2690 N=11
          2700 I$="LAB. DATA COORD."
          2710 GO TO 2420

          2720 REM
          2730 REM ************ CHECK END OF DATA *****************************

+++3+++   2740 N=0
```

```
          2750 Z$=REP("10",6,2)
          2760 PRINT "JMORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)   "J
          2770 INPUT N$
          2780 IF N$<>"N" THEN 730
          2790 GO TO 2820
+++3+++   2800 PRINT "J**** ABNORMAL PROGRAM END ****"
          2810 GO TO 2830
+++1+++   2820 PRINT "JNORMAL PROGRAM END"
+++1+++   2830 PRINT @0,2;
          2840 END

          2850 REM ************ DIAGNOSTIC MESSAGES *********************************

+++2+++   2860 PRINT "ERROR IN LENGTH OF Z$"
          2870 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          2880 GO TO 740

          2890 REM

+++4+++   2900 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY "JB(I,2)J
          2910 PRINT " CHARACTERS"
          2920 GO TO 1520

          2930 REM

+++2+++   2940 PRINT D$J" CANNOT BE LONGER THAN "JB(I,2)J" CHARACTERS"
          2950 GO TO 1520

          2960 REM
          2970 REM ************ B ARRAY (22,5) ************************************

          2980 DATA 8,2,1,0,0,12,6,0,0,0,20,1,2,1,5
          2990 DATA 21,6,6,0,0,27,7,5,0,0,48,7,4,0,0,55,7,4,0,0
          3000 DATA 62,7,4,0,0,69,7,5,0,0,76,7,4,0,0,83,4,2,0,2400,87,3,0,0,0
          3010 DATA 10,2,1,0,0,112,4,7,0,0,116,2,8,0,0,118,2,9,0,0
          3020 DATA 120,4,2,0,2400,124,4,2,0,2400,90,7,5,0,0
          3030 DATA 97,6,5,0,0,103,9,4,0,0,12,6,0,0,0

          3040 REM
          3050 REM ************ C ARRAY (22,2) ************************************

          3060 DATA 1,11,13,38,57,13,71,14,86,22,108,11,120,19
          3070 DATA 140,8,149,14,163,22,186,13,200,8
          3080 DATA 211,11,222,8,231,8,240,7,248,10,259,9,268,7,276,21,298,24
          3090 DATA 323,15

          3100 REM
          3110 REM ************ E ARRAY (22) ************************************

          3120 DATA 0,0,0,0,3,2,2,1,1,2,0,0,0,0,0,0,0,1,3,4,0

          3130 REM
          3140 REM ************ F$ ARRAY (72) ************************************

          3150 DATA "K941K942K945K951K952K953K954K955"
          3160 DATA "X302X545X546X547X548X549X550X551X552DATS"

          3170 REM
          3180 REM ************ J$ ARRAY (20) AND K$ ARRAY (38) ******************
```

```
3190 DATA "20212223242526272829"
3200 DATA "DRSTCRRADEDCCVNUHREXENAABEAESSSWSELAOY"

3210 REM
3220 REM ************** X$ ARRAY (350) ************************************

3230 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)       "
3240 DATA "SERIAL NUMBER/CONTROL NUMBER/CALIBRATION STD. CONC."
3250 DATA "PEAK HEIGHT/AGENT CONCENTRATION/DILUTION/BUBBLER VOLUME"
3260 DATA "CONCENTRATION(/SAMPLE)/ANALYSIS TIME/INITIALS***PAGE NUMBER"
3270 DATA "SET TYPE/LOCATION/PURPOSE/START TIME/STOP TIME"
3280 DATA "AIRFLOW/CONTROL CONCENTRATION/AIR SAMPLE CONCENTRATION"
3290 DATA "REANALYSIS DATE"

3300 REM
3310 REM ************** END OF PROGRAM ************************************
```

FILE # 6

```
         1 GO TO 100
         4 GO TO 730
         8 GO TO 2800

+++1+++  100 REM **** DATA SHEET #4 - ANALYST WORK SHEET FOR L              ****
         110 REM                  #8 - LAB DATA COORDINATOR WORK SHEET
         120 REM                  DATA ENTRY - LOAD INPUT DATA TO TAPE
         130 REM                  VERSION 9 - 10/29/81
         140 REM
         150 REM                  BY:  STEARNS-ROGER, INC.
         160 REM ****                  M. E. MARTIN                        ****

         170 PAGE
         180 INIT
         190 SET KEY
         200 DIM S(22,5),C(22,2),E(22)
         210 DIM F$(68),G$(78),J$(20),K$(38),N$(1),X$(350),W$(127),Z$(127)
         220 N=0
         230 G$=" "
         240 G$=G$&G$
         250 H$="X XXXX.X XXX.XXXXXXXXX XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         260 I$="XX  XXXXXXL XXXXXNN XX.XXXNA     NA      XXXXX. XXX.XX XXXX."
         270 L$=" XXXX.X X.XXX XXX.XXXXXXXXXXXXXXXXXXX"
         280 PRINT "JIS THIS ANALYST WORK SHEET DATA FOR LT  (ENTER Y OR N)  "$

         290 REM

         300 INPUT N$
         310 IF N$="Y" THEN 340
         320 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
         330 GO TO 2800
+++1+++  340 READ B,C,E,F$,Y$
         350 F$=F$&Y$
         360 READ J$,K$
         370 READ X$
         380 FOR I=1 TO 6
         390  READ Y$
         400  X$=X$&Y$
         410 NEXT I
         420 DELETE Y$
         430 PRINT "JINSERT THE DATA TAPE INTO UNIT 4?24"
         440 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "$
         450 INPUT U
         460 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  "$
         470 INPUT T$
         480 T$=SEG(T$,1,3)
         490 FIND @U:1
         500 INPUT @U,13:Z$
         510 A$=SEG(Z$,4,2)
         520 F$=SEG(Z$,0,3)
         530 C$=SEG(Z$,8,9)
         540 IF A$="04" AND B=T$ THEN 580
         550 PRINT "JTHIS IS THE WRONG DATA TAPE"
         560 PRINT "JTHIS TAPE IS FOR DATA SHEET #"A$" FOR "C$
         570 GO TO 2800
+++1+++  580 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  "$
         590 INPUT N$
         600 IF N$="Y" THEN 690
```

```
          610 IF U=33 THEN 660
+++1+++   620 INPUT @U,6:T
          630 IF T=1 THEN 690
          640 INPUT @U,13:Z$
          650 GO TO 620
+++2+++   660 IF TYP(0)=1 THEN 690
          670 INPUT @U,13:Z$
          680 GO TO 660
+++3+++   690 Z$="&AA0410"&I$
          700 Z$=Z$&H$

          710 REM
          720 REM ********** BEGIN DATA INPUT ********************************

+++2+++   730 PAGE
+++1+++   740 PRINT "BEGIN DATA ENTRY FROM ANALYST WORK SHEET 84"
          750 I1=1
          760 I2=12
+++2+++   770 C1=0
          780 OO=0
          790 FOR I=I1 TO I2
          800  IF I>10 OR OO=0 OR I<7 THEN 830
          810  V$="NA"
          820  GO TO 970
+++1+++   830  IF I<> 22 THEN 850
          840  IF M=0 THEN 1060
+++1+++   850  D$=SEG(Y$,C(I,1),C(I,2))
          860  C$=SEG(Z$,B(I,1),B(I,2))
          870  PRINT "ENTER "D$" "C$
+++1+++   880  INPUT V$
          890  IF V$="" THEN 1060
          900  Z1=LEN(V$)
          910  IF Z1>B(I,2) THEN 2940
          920  IF V$=" " THEN 1350
          930  IF V$<>"M" THEN 960
          940  V$="MISSING"
          950  GO TO 1050
+++1+++   960  IF V$<>"NA" THEN 1010
+++1+++   970  FOR K1=3 TO B(I,2)
          980   V$=V$" "
          990  NEXT K1
          1000  GO TO 1050
+++1+++   1010  IF I<>5 THEN 1030
          1020  OO=1
+++1+++   1030  GO TO B(I,3) OF 1350,1410,1550,1550,1830,1906,2070,2170,2260
          1040  IF LEN(V$)<>B(I,2) THEN 2900
+++12++   1050  Z$=REP(V$,B(I,1),B(I,2))
+++2+++   1060 NEXT I
          1070 IF I2=22 THEN 2310
          1080 I1=13
          1090 I2=22
          1100 PAGE
          1110 A$=SEG(Z$,21,3)
          1120 IF A$<>"CAL" THEN 1170
          1130 A$=SEG(Z$,8,2)
          1140 Z$=REP(A$,10,2)
          1150 Z$=REP(L$,90,38)
          1160 GO TO 2310
+++1+++   1170 A$=SEG(Z$,21,6)
          1180 PRINT "BEGIN DATA ENTRY FROM LAB COORDINATOR WORK SHEET 88"
```

```
+++1+++   1190 PRINT "ENTER THE CONTROL NUMBER (AAANNN)"
          1200 INPUT B$
          1210 IF B$=A$ THEN 1240
          1220 PRINT "YOU SHOULD BE ENTERING DATA FOR ";A$
          1230 GO TO 1190
+++1+++   1240 A$=SEG(Z$,8,2)
          1250 Z$=REP(A$,10,2)
          1260 PRINT "IS THIS REANALYSIS DATA?  (ENTER Y OR N)  ";
          1270 INPUT N$
          1280 IF N$<>"Y" THEN 770
          1290 N=1
          1300 Z$=REP("30",6,2)
          1310 Z$=REP("XXXXXX",12,6)
          1320 GO TO 770

          1330 REM
          1340 REM ************ CHECK NO. 1 - LEFT ZERO FILL **********************

+++2+++   1350 IF Z1=B(I,2) THEN 1050
          1360 FOR K=Z1+1 TO B(I,2)
          1370  V$=" 0"+V$
          1380 NEXT K
          1390 GO TO 1050

          1400 REM ************ CHECK NO. 2 -LIMITS ********************************

+++1+++   1410 IF Z1<>B(I,2) THEN 2900
          1420 FOR K=1 TO Z1
          1430  E$=SEG(V$,K,1)
          1440  E1=ASC(E$)
          1450  IF E1>47 AND E1<58 THEN 1480
          1460  PRINT "THIS ENTRY MUST BE NUMERIC"
          1470  GO TO 1520
+++1+++   1480 NEXT K
          1490 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 1510
          1500 GO TO 1050
+++1+++   1510 PRINT D$;" MUST BE IN THE RANGE OF ";B(I,4);" TO ";B(I,5)
+++12++   1520 PRINT "RE-ENTER ";D$;" ";C$
          1530 GO TO 880

          1540 REM ************ CHECK NO. 4 - LINE UP DECIMAL POINTS ************

+++2+++   1550 Q$=SEG(V$,1,1)
          1560 IF Q$="<" OR Q$=">" THEN 1600
+++1+++   1570 V$=" "+V$
          1580 Z1=Z1+1
          1590 IF Z1>B(I,2) THEN 1780
+++1+++   1600 J=POS(V$,".",1)
          1610 IF J=0 THEN 1800
          1620 J1=Z1-J
          1630 K1=B(I)
          1640 IF J1<K1 THEN 1760
          1650 IF J1=K1 THEN 1700
          1660 FOR K=J1+1 TO K1
          1670  V$=V$+"0"
          1680 NEXT K
          1690 Z1=LEN(V$)
+++1+++   1700 IF Z1=B(I,2) THEN 1050
          1710 IF Z1>B(I,2) THEN 1780
          1720 FOR K=Z1+1 TO B(I,2)
```

```
         1730  V$=REF(" ",2,0)
         1740 NEXT K
         1750 GO TO 1050
+++1+++  1760 PRINT "ONLY "+K1+" DECIMAL FIGURES ARE ALLOWED"
         1770 GO TO 1520
+++2+++  1780 PRINT "THIS NUMBER HAS TOO MANY FIGURES"
         1790 GO TO 1520
+++1+++  1800 PRINT "THIS NUMBER HAS NO DECIMAL POINT"
         1810 GO TO 1520

         1820 REM ************ CHECK NO. 5 - CHECK FOR < AND > ********************

+++1+++  1830 IF Z1>B(I,2) THEN 2940
         1840 Q$=SEG(V$,1,1)
         1850 IF Q$="<" OR Q$=">" THEN 1870
         1860 GO TO 1570
+++1+++  1870 PRINT "NO < OR > IS ALLOWED WITH THIS VALUE"
         1880 GO TO 1520

         1890 REM ************ CHECK NO. 6 - CONTROL NUMBER FORMAT ***************

+++1+++  1900 IF Z1<>B(I,2) THEN 2900
         1910 FOR K=1 TO 6
         1920  E$=SEG(V$,K,1)
         1930  C1=ASC(E$)
         1940  IF E1<65 OR E1>90 THEN 1980
         1950  IF K<5 THEN 2010
         1960  PRINT "CHARACTER NUMBER "+K+" MUST BE NUMERIC"
         1970  GO TO 1520
++-1+++  1980  IF K>4 AND E1>47 AND E1<58 THEN 2010
         1990  PRINT "CHARACTER NUMBER "+K+" MUST BE ALPHABETIC"
         2000  GO TO 1520
+++2+++  2010 NEXT K
         2020 E1=SEG(V$,1,3)
         2030 IF E$<>"CAL" THEN 1050
         2040 C1=1
         2050 GO TO 1050

         2060 REM ************ CHECK NO. 7 - CHECK SET TYPE **********************

+++1+++  2070 IF Z1<>B(I,2) THEN 2900
         2080 K4=1
         2090 FOR K=1 TO 17
         2100  S$=SEG(F$,K4,4)
         2110  IF V$=S$ THEN 1050
         2120  K4=K4+4
         2130 NEXT K
         2140 PRINT V$+" IS NOT A VALID SET TYPE"
         2150 GO TO 1520

         2160 REM ************ CHECK NO. 8 - LOCATION ****************************

+++1+++  2170 K2=1
         2180 FOR K=1 TO 19
         2190  S$=SEG(K$,K2,2)
         2200  IF V$=S$ THEN 1050
         2210  K2=K2+2
         2220 NEXT K
         2230 PRINT V$+" IS NOT A VALID LOCATION"
         2240 GO TO 1520
```

```
        2250 REM ************ CHECK NO. 9 - PURPOSE **************************

+++1+++ 2260 IF V$="PL" OR V$="QP" OR V$="QL" OR V$="CA" THEN 1050
        2270 PRINT V$;" IS NOT A VALID PURPOSE CODE"
        2280 GO TO 1520

        2290 REM
        2300 REM ************ WRITE RECORD TO TAPE AND CHECK FOR COMMENTS *****

+++2+++ 2310 Z1=LEN(Z$)
        2320 IF Z1<>127 THEN 2860
        2330 PRINT @41;Z$
        2340 PRINT @0,12;Z$
        2350 PRINT "DIS THERE AN ANALYST'S COMMENT?  (ENTER Y OR N)   ";
        2360 INPUT N$
        2370 IF N$<>"Y" THEN 2660

        2380 REM
        2390 REM ************ PROCESS COMMENTS ***********************************

        2400 N=1
        2410 I$="ANALYST'S"
+++2+++ 2420 A$=SEG(J$,N,2)
        2430 W$=Z$
        2440 W$=REP(A$,6,2)
        2450 W$=REP(G$,34,78)
+++1+++ 2460 PRINT "JENTER COMMENT (72 CHARACTERS OR LESS)"
        2470 INPUT C$
        2480 Z1=LEN(C$)
        2490 IF Z1<=72 THEN 2520
        2500 PRINT "JTHIS COMMENT IS TOO LONG"
        2510 GO TO 2460
+++1+++ 2520 W$=REP(C$,34,Z1)
        2530 Z1=LEN(W$)
        2540 IF Z1<>127 THEN 2860
        2550 PRINT @41;W$
        2560 PRINT @0,12;W$
        2570 IF N=9 THEN 2660
        2580 IF N=19 THEN 2740
        2590 PRINT "DIS THERE ANOTHER ";I$;" COMMENT?  (ENTER Y OR N)   ";
        2600 INPUT N$
        2610 N=N+2
        2620 IF N$="Y" THEN 2420

        2630 REM
        2640 REM ************ MORE COMMENTS **********************************

        2650 IF N>10 THEN 2740
+++2+++ 2660 PRINT "DIS THERE A LAB. DATA COORD. COMMENT?  (ENTER Y OR N)   ";
        2670 INPUT N$
        2680 IF N$<>"Y" THEN 2740
        2690 N=11
        2700 I$="LAB. DATA COORD."
        2710 GO TO 2420

        2720 REM
        2730 REM ************ CHECK END OF DATA ******************************

+++3+++ 2740 M=0
```

```
          2750 Z$=REP("10",6,2)
          2760 PRINT "SMOKE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)   ";
          2770 INPUT N$
          2780 IF N$<>"N" THEN 730
          2790 GO TO 2820
+++3+++   2800 PRINT "J**** ABNORMAL PROGRAM END ****"
          2810 GO TO 2830
+++1+++   2820 PRINT "JNORMAL PROGRAM END"
+++1+++   2830 PRINT @0,2;
          2840 END

          2850 REM ************ DIAGNOSTIC MESSAGES *********************************

+++2+++   2860 PRINT "ERROR IN LENGTH OF Z$"
          2870 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          2880 GO TO 740

          2890 REM

+++4+++   2900 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
          2910 PRINT " CHARACTERS"
          2920 GO TO 1520

          2930 REM

+++2+++   2940 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
          2950 GO TO 1520

          2960 REM
          2970 REM ************ B ARRAY (22,5) ***********************************

          2980 DATA 8,2,1,0,0,12,6,0,0,0,20,1,2,1,5
          2990 DATA 21,6,6,0,0,27,7,5,0,0,48,7,4,0,0,55,7,4,0,0
          3000 DATA 62,7,4,0,0,69,7,5,0,0,76,7,4,0,0,83,4,2,0,2400,87,3,0,0,0
          3010 DATA 10,2,1,0,0,112,4,7,0,0,116,2,8,0,0,118,2,9,0,0
          3020 DATA 120,4,2,0,2400,124,4,2,0,2400,90,7,5,0,0
          3030 DATA 97,6,5,0,0,103,9,4,0,0,12,6,0,0,0

          3040 REM
          3050 REM ************ C ARRAY (22,2) ***********************************

          3060 DATA 1,11,13,30,57,13,71,14,86,22,108,11,120,19
          3070 DATA 140,8,149,14,163,22,186,13,200,8
          3080 DATA 211,11,222,8,231,8,240,7,248,10,259,9,268,7,276,21,298,24
          3090 DATA 322,15

          3100 REM
          3110 REM ************ E ARRAY (22) ************************************

          3120 DATA 0,0,0,0,3,0,2,1,1,2,0,0,0,0,0,0,0,0,1,3,4,0

          3130 REM
          3140 REM ********** F$ ARRAY (68) ***********************************

          3150 DATA "K941K942K945K951K952K953K954K955"
          3160 DATA "X302X545X546X547X548X549X550X551X552"

          3170 REM
          3180 REM ************ J$ ARRAY (20) AND K$ ARRAY (38) *****************
```

```
3190 DATA "20212223242526272829"
3200 DATA "DRSTCRRADEDCCVHONREXENAABEAESSSWSELAOT"

3210 REM
3220 REM ************** X$ ARRAY (350) ************************************

3230 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDHMYY)       "
3240 DATA "SERIAL NUMBER/CONTROL NUMBER/CALIBRATION STD. CONC."
3250 DATA "PEAK HEIGHT/AGENT CONCENTRATION/DILUTION/BUBBLER VOLUME"
3260 DATA "CONCENTRATION(/SAMPLE)/ANALYSIS TIME/INITIALS***PAGE NUMBER"
3270 DATA "SET TYPE/LOCATION/PURPOSE/START TIME/STOP TIME"
3280 DATA "AIRFLOW/CONTROL CONCENTRATION/AIR SAMPLE CONCENTRATION"
3290 DATA "REANALYSIS DATE"

3300 REM
3310 REM ************* END OF PROGRAM *************************************
```

```
         1 GO TO 100
         4 GO TO 660
         8 GO TO 2040

+++1+++  100 REM **** DATA SHEET # 9 - ANALYTICAL DATA SHEET FOR MIRAN 80 ****
         110 REM           DATA ENTRY - LOAD INPUT DATA TO TAPE
         120 REM                  VERSION 10 - 3/5/82
         130 REM
         140 REM                  BY:  STEARNS-ROGER, INC.
         150 REM ****                  M. E. MARTIN                        ****
         151 REM
         152 REM       MODIFIED BY:  Computer Sciences Corporation
         153 REM                     Isaac Willy Traxler
         154 REM                     April 8,1982
         155 REM
         156 REM  PROGRAM MODIFIED TO ACCEPT NEW FORMAT FOR QL DATA SHEET
         157 REM

         160 INIT
         170 SET KEY
         180 DIM B(23,5),C(23,2),I0(2,17)
         190 DIM F$(68),J$(10),K$(38),N$(1),X$(450),W$(104),Z$(104)
         200 F$=" "
         210 G$="                                                    "
         220 H$="XXXXXXXXX.XXXXXX.XXXXXXXXX.XXXXXX.XXXXX
         230 I$="XX  XXXXXX XXXXXXXXXXXXXXXXXXXXX.XXXXXX."
         240 PRINT "LDATA ENTRY PROGRAM FOR MIRAN 80"
         250 READ B,C
         260 READ J$,K$,F$
         270 READ Y$
         280 F$=F$&Y$
         290 DELETE Y$
         300 READ X$
         310 FOR I=1 TO 7
         320  READ Y$
         330  X$=X$&Y$
         340 NEXT I
         350 DELETE Y$
         355 READ I0
         360 PRINT "JINSERT THE OUTPUT DATA TAPE INTO UNIT 4924"
         370 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE  "$
         380 INPUT U
         390 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  "$
         400 INPUT T$
         410 T$=SEG(T$,1,3)
         420 FIND @U:1
         430 INPUT @U,13:Z$
         440 A$=SEG(Z$,4,2)
         450 B$=SEG(Z$,8,3)
         460 C$=SEG(Z$,8,9)
         470 IF A$="09" AND B$=T$ THEN 510
         480 PRINT "JTHIS IS THE WRONG DATA TAPE"
         490 PRINT "JTHIS TAPE IS FOR DATA SHEET #"$A$;" FOR "$C$
         500 GO TO 2030
+++1+++  510 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  "$
         520 INPUT N$
         530 IF N$="Y" THEN 620
         540 IF U=33 THEN 590
```

```
+++1+++  550 INPUT @U,6:T
         560 IF T=1 THEN 620
         570 INPUT @U,13:Z$
         580 GO TO 550
+++2+++  590 IF TYP(0)=1 THEN 620
         600 INPUT @U,13:Z$
         610 GO TO 590
+++4+++  620 Z$="RMAD910"&I$
         630 Z$=Z$&H$

         640 REM
         650 REM ************* BEGIN DATA INPUT ************************************

+++2+++  660 PRINT
         665 I1=1
         670 FOR I2=1 TO 17
         675  I=IO(I1,I2)
         680  D$=SEG(X$,C(I,1),C(I,2))
         690  C$=SEG(Z$,B(I,1),B(I,2))
         700  PRINT "ENTER ";D$;" ";C$
+++1+++  710  INPUT V$
         712  IF I<>4 THEN 720
         714  IF V$<>"QL" THEN 720
         716  I1=2
+++2+++  720  IF V$="" THEN 870
         730  Z1=LEN(V$)
         740  IF Z1>B(I,2) THEN 2150
         750  IF V$=" " THEN 910
         760  IF V$<>"M" THEN 790
         770  V$="MISSING"
         780  GO TO 860
+++1+++  790  IF V$<>"NA" THEN 840
         800  FOR K1=3 TO B(I,2)
         810   V$=V$&" "
         820  NEXT K1
         830  GO TO 860
+++1+++  840  GO TO B(I,3) OF 910,970,1110,1210,1300,1340,1590
         850  IF LEN(V$)<>B(I,2) THEN 2110
+++10++  860  Z$=REP(V$,B(I,1),B(I,2))
+++1+++  870 NEXT I2
         880 GO TO 1670

         890 REM
         900 REM ************* CHECK NO. 1 - LEFT ZERO FILL ************************

+++2+++  910 IF Z1=B(I,2) THEN 860
         920 FOR K=Z1+1 TO B(I,2)
         930  V$="0"&V$
         940 NEXT K
         950 GO TO 860

         960 REM ************* CHECK NO. 2 -LIMITS *********************************

+++1+++  970 IF Z1<>B(I,2) THEN 2110
         980 FOR K=1 TO Z1
         990  E$=SEG(V$,K,1)
        1000  E1=ASC(E$)
        1010  IF E1>47 AND E1<58 THEN 1040
        1020  PRINT "THIS ENTRY MUST BE NUMERIC"
        1030  GO TO 1080
```

```
+++1+++  1040 NEXT K
         1050 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 1070
         1060 GO TO 860
+++1+++  1070 PRINT D$;" MUST BE IN THE RANGE OF ";B(I,4);" TO ";B(I,5)
+++10++  1080 PRINT "REENTER ";D$;" ";C$
         1090 GO TO 710

         1100 REM ************ CHECK NO. 3 - ACCEPTABLE SET TYPES ***************

+++1+++  1110 IF Z1<>B(I,2) THEN 2110
         1120 K4=1
         1130 FOR K=1 TO 17
         1140  S$=SEG(F$,K4,4)
         1150  IF V$=S$ THEN 860
         1160  K4=K4+4
         1170 NEXT K
         1180 PRINT V$;" IS NOT A VALID SET TYPE"
         1190 GO TO 1080

         1200 REM ************ CHECK NO. 4 - LOCATIONS ***************************

+++1+++  1210 K2=1
         1220 FOR K=1 TO 19
         1230  S$=SEG(K$,K2,2)
         1240  IF V$=S$ THEN 860
         1250  K2=K2+2
         1260 NEXT K
         1270 PRINT V$;" IS NOT AN ALLOWABLE LOCATION"
         1280 GO TO 1080

         1290 REM ************ CHECK NO. 5 - PURPOSE ****************************

+++1+++  1300 IF V$="PL" OR V$="QL" OR V$="CA" THEN 860
         1310 PRINT V$;" IS NOT A VALID PURPOSE CODE"
         1320 GO TO 1080

         1330 REM ************ CHECK NO. 6 - LINE UP DECIMAL POINTS *************

+++1+++  1340 Q$=SEG(V$,1,1)
         1350 IF Q$="<" OR Q$=">" THEN 1390
+++1+++  1360 V1=" "+V$
         1370 Z1=Z1+1
         1380 IF Z1>B(I,2) THEN 1540
+++1+++  1390 J=POS(V$,".",1)
         1400 IF J=0 THEN 1560
         1410 J1=Z1-J
         1420 GO TO J1 OF 1440,1450,1520,1520,1520
         1430 V$=V$+"0"
+++1+++  1440 V$=V$+"0"
++1+++   1450 Z1=LEN(V$)
         1460 IF Z1=B(I,2) THEN 860
         1470 IF Z1>B(I,2) THEN 1540
         1480 FOR K=Z1+1 TO B(I,2)
         1490  V$=REP(F$,2,0)
         1500 NEXT K
         1510 GO TO 860
+++3+++  1520 PRINT "ONLY TWO DECIMAL FIGURES ARE ALLOWED"
         1530 GO TO 1080
+++21++  1540 PRINT "THIS NUMBER HAS TOO MANY FIGURES"
         1550 GO TO 1080
```

```
+++1+++  1560 PRINT 'THIS NUMBER HAS NO DECIMAL POINT'
         1570 GO TO 1080

         1580 REM ************ CHECK NO. 7 - CHECK FOR < AND > ******************

+++1+++  1590 IF Z1>B(I,2) THEN 2150
         1600 Q$=SEG(V$,1,1)
         1610 IF Q$='<' OR Q$='>' THEN 1630
         1620 GO TO 1360
+++1+++  1630 PRINT 'NO < OR > IS ALLOWED WITH THIS VALUE'
         1640 GO TO 1080

         1650 REM
         1660 REM ************ WRITE RECORD TO TAPE AND CHECK FOR COMMENTS *****

+++1+++  1670 Z1=LEN(Z$)
         1680 IF Z1<>104 THEN 2070
         1690 PRINT @41:Z$
         1700 PRINT @U,12:Z$
         1710 PRINT 'JIS THERE A COMMENT?  (ENTER Y OR N)   ';
         1720 INPUT N$
         1730 IF N$<>'Y' THEN 2000

         1740 REM
         1750 REM ************ PROCESS COMMENTS ***********************************

         1760 N=1
+++1+++  1770 A$=SEG(J$,N,2)
         1780 W$=Z$
         1790 W$=REP(A$,6,2)
         1800 W$=REP(G$,37,34)
         1810 W$=REP(G$,71,34)
+++1+++  1820 PRINT 'JENTER COMMENT (68 CHARACTERS OR LESS)'
         1830 INPUT C$
         1840 Z1=LEN(C$)
         1850 IF Z1<=68 THEN 1880
         1860 PRINT 'JTHIS COMMENT IS TOO LONG'
         1870 GO TO 1820
+++1+++  1880 W$=REP(C$,37,Z1)
         1890 Z1=LEN(W$)
         1900 IF Z1<>104 THEN 2070
         1910 PRINT @41:W$
         1920 PRINT @U,12:W$
         1930 IF N=9 THEN 2000
         1940 PRINT 'JIS THERE ANOTHER COMMENT?  (ENTER Y OR N)   ';
         1950 INPUT N$
         1960 N=N+2
         1970 IF N$='Y' THEN 1770

         1980 REM
         1990 REM ************ CHECK END OF DATA ***********************************

+++2+++  2000 PRINT 'JMORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)   ';
         2010 INPUT N$
         2020 IF N$<>'N' THEN 660
+++1+++  2030 PRINT @U,2:
+++1+++  2040 PRINT 'PROGRAM FINISHED'
         2050 END

         2060 REM ************ DIAGNOSTIC MESSAGES ******************************
```

```
+++2+++  2070 PRINT "ERROR IN LENGTH OF Z$"
         2080 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
         2090 GO TO 620

         2100 REM

+++3+++  2110 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
         2120 PRINT " CHARACTERS"
         2130 GO TO 1080

         2140 REM

+++2+++  2150 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
         2160 GO TO 1020

         2170 REM
         2180 REM ************ B ARRAY (23,5) ********************************

         2190 DATA 8,2,1,0,0,12,6,0,0,0,20,2,4,0,0,22,2,5,0,0,24,1,2,1,6
         2200 DATA 25,4,3,0,0,29,4,2,0,2400,33,4,2,0,2400,37,7,6,0,0
         2210 DATA 44,7,6,0,0,51,3,0,0,0,54,7,6,0,0,61,7,6,0,0
         2220 DATA 68,3,0,0,0,71,7,6,0,0,78,7,6,0,0,85,3,0,0,0
         2222 DATA 37,7,6,0,0,44,7,6,0,0,54,7,6,0,0
         2224 DATA 61,7,6,0,0,71,7,6,0,0,78,7,6,0,0

         2230 REM
         2240 REM ************ C ARRAY (23,2) ***************************************

         2250 DATA 1,11,13,38,52,8,60,7,68,22,91,8,100,10,111,9,120,29,150,19
         2260 DATA 170,8,178,25,204,15,220,8,228,27,256,17,274,8
         2265 DATA 282,26,309,25,334,22,357,21,378,24,403,23

         2270 REM
         2280 REM ************ J$ ARRAY (10) AND K$ ARRAY (38) ******************

         2290 DATA "2021222324"
         2300 DATA "DRSTGRRADEDCCVHOHREXENAABEAESSSWSELAOT"

         2310 REM
         2320 REM ************ F$ (68) ****************************************

         2330 DATA "K941K942K945K951K952K953K954K955"
         2340 DATA "X302X545X546X547X548X549X550X551X552"

         2350 REM
         2360 REM ************ X$ (450) ***************************************

         2370 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)/LOCATION"
         2380 DATA "PURPOSE/SERIAL NUMBER OF MIRAN/SET TYPE/START TIME/STOP TIME"
         2390 DATA "CHLOROPICRIN - 1 HOUR AVERAGE/CHLOROPICRIN - PEAK/INITIALS"
         2400 DATA "PHOSGENE - 1 HOUR AVERAGE/PHOSGENE - PEAK/INITIALS"
         2410 DATA "CHLOROFORM - 1 HOUR AVERAGE/CHLOROFORM - PEAK/INITIALS"
         2412 DATA "CHLOROPICRIN - TARGET CONC/CHLOROPICRIN - FOUND CONC"
         2414 DATA "PHOSGENE - TARGET CONC/PHOSGENE - FOUND CONC"
         2416 DATA "CHLOROFORM - TARGET CONC/CHLOROFORM - FOUND CONC"

         2420 REM
         2430 REM***************** I0(2,17) ********************************
         2440 REM
```

```
2450 DATA 1,2,5,6,3,4,7,8,9,10,11,12,13,14,15,16,17
2460 DATA 1,2,5,6,3,4,7,8,18,19,11,20,21,14,22,23,17

9430 REM ************ END OF PROGRAM ************************************
```

FILE # 12

```
        1 GO TO 100
        4 GO TO 670
        8 GO TO 1540

+++1+++  100 REM ****  DATA SHEET # 10 - BLDG 1611 RECEIPT INSPECTION  ****
         110 REM            DATA ENTRY - LOAD INPUT DATA TO TAPE
         120 REM                 VERSION 8 - 06/08/81
         130 REM
         140 REM                 BY:  STEARNS-ROGER, INC.
         150 REM ****                 M. E. MARTIN                    ****

         160 PAGE
         170 INIT
         180 SET KEY
         190 DIM B(7,5),C(7,2),F$(68),J$(10),N$(1),X$(170),Z$(70)
         200 G$='
         210 H$='XX  XXXXXXXXXXXXXX
         220 PRINT 'JIS THIS BLDG 1611 RECEIPT INSPECTION DATA? (ENTER Y OR N) ';
         230 INPUT N$
         240 IF N$='Y' THEN 270
         250 PRINT 'JYOU ARE USING THE WRONG DATA ENTRY PROGRAM'
         260 GO TO 1540
+++1+++  270 READ B,C
         280 READ J$,F$
         290 READ Y$
         300 F$=F$&Y$
         310 DELETE Y$
         320 READ X$
         330 FOR I=1 TO 3
         340  READ Y$
         350  X$=X$&Y$
         360 NEXT I
         370 DELETE Y$
         380 PRINT 'JINSERT THE DATA TAPE INTO UNIT 4924'
         390 PRINT 'JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ';
         400 INPUT U
         410 PRINT 'JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  ';
         420 INPUT T$
         430 T$=SEG(T$,1,3)
         440 FIND @U:1
         450 INPUT @U,13:Z$
         460 A$=SEG(Z$,4,2)
         470 B$=SEG(Z$,8,3)
         480 I$=SEG(Z$,8,9)
         490 IF A$='10' AND B$=T$ THEN 530
         500 PRINT 'JTHIS IS THE WRONG DATA TAPE'
         510 PRINT 'JTHIS TAPE IS FOR DATA SHEET #';A$;' FOR ';I$
         520 GO TO 1530
+++1+++  530 PRINT 'JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ';
         540 INPUT N$
         550 IF N$='Y' THEN 640
         560 IF U $$ THEN 610
+++1+++  570 INPUT @U,6:T
         580 IF T=1 THEN 640
         590 INPUT @U,13:Z$
         600 GO TO 570
+++2+++  610 IF TYP(0)=1 THEN 640
         620 INPUT @U,13:Z$
```

```
          630 GO TO 610
+++5+++   640 Z$="RMA1010"&M$

          650 REM
          660 REM ************ BEGIN DATA INPUT ************************************

+++2+++   670 PRINT
          680 V$=" "
          690 FOR I=1 TO 7
          700   IF I=6 AND V$="X" THEN 830
          710   D$=SEG(X$,C(I,1),C(I,2))
          720   C$=SEG(Z$,B(I,1),B(I,2))
          730   PRINT "ENTER "|D$|" "|C$
+++1+++   740   INPUT V$
          750   IF V$<>"" THEN 780
          760   IF I<5 THEN 830
          770   V$=" "
+++1+++   780   Z1=LEN(V$)
          790   IF Z1>B(I,2) THEN 1650
          800   GO TO B(I,3) OF 910,970,1070,1090,1150
          810   IF LEN(V$)<>B(I,2) THEN 1610
+++7+++   820   Z$=REP(V$,B(I,1),B(I,2))
          825   IF I=7 THEN 827
          826   GO TO 830
+++1+++   827   PAGE
+++3+++   830 NEXT I
          840 M$=SEG(Z$,26,2)
          850 IF M$<>"  " THEN 1220
          860 PRINT "|THE FIG MUST BE EITHER DESTROYED OR RETURNED"
          870 PRINT "|REENTER FROM THE BEGINNING"
          880 GO TO 640

          890 REM
          900 REM ************ CHECK NO. 1 - CHECK ACTION ***************************

+++1+++   910 IF V$<>"X" AND V$<>" " THEN 930
          920 GO TO 820
+++1+++   930 PRINT "ACTION MUST BE X OR BLANK"
+++4+++   940 PRINT "|REENTER "|D$|" "|C$
          950 GO TO 740

          960 REM ************ CHECK NO. 2 - ACCEPTABLE SET TYPES ******************

+++1+++   970 IF Z1<>B(I,2) THEN 1610
          980 K4=1
          990 FOR K=1 TO 17
         1000   S$=SEG(F$,K4,4)
         1010   IF V$=S$ THEN 820
         1020   K4=K4+4
         1030 NEXT K
         1040 PRINT V$|" IS NOT A VALID SET TYPE"
         1050 GO TO 940

         1060 REM ************ CHECK NO. 3 - NOT USED

+++1+++  1070 GO TO 820

         1080 REM ************ CHECK NO. 4 - LEFT ZERO FILL ************************

+++1+++  1090 IF Z1=B(I,2) THEN 820
```

```
          1100 FOR K=Z1+1 TO B(I,2)
          1110  V$=" "&V$
          1120 NEXT K
          1130 GO TO 820

          1140 REM ************ CHECK NO. 5 - FILL IN COMMENT WITH BLANKS *******

***1***   1150 IF Z1=43 THEN 820
          1160 FOR K=Z1+1 TO 43
          1170  V$=V$&" "
          1180 NEXT K
          1190 GO TO 820

          1200 REM
          1210 REM ************ WRITE RECORD TO TAPE ******************************

***1***   1220 N=1
***1***   1230 Z1=LEN(Z$)
          1240 IF Z1<>70 THEN 1570
          1250 PRINT @41;Z$
          1260 PRINT @0,12;Z$
          1270 IF N=11 THEN 1500
          1280 PRINT "DIS THERE ANOTHER COMMENT?  (ENTER Y OR N)   ";
          1290 INPUT N$
          1300 IF N$<>"Y" THEN 1450

          1310 REM
          1320 REM ************ PROCESS ADDITIONAL COMMENTS ********************

          1330 A$=SEG(J$,N,2)
          1340 Z$=REP(A$,6,2)
          1350 Z$=REP(G$,26,45)
***1***   1360 PRINT "ENTER COMMENT (43 CHARACTERS OR LESS)"
          1370 INPUT C$
          1380 Z1=LEN(C$)
          1390 IF Z1<=43 THEN 1420
          1400 PRINT "THIS COMMENT IS TOO LONG"
          1410 GO TO 1360
***1***   1420 Z$=REP(C$,28,Z1)
          1430 N=N+2
          1440 GO TO 1230
***1***   1450 A$="10"
          1460 Z$=REP(A$,6,2)
          1470 Z$=REP(G$,26,45)

          1480 REM
          1490 REM ************ CHECK END OF DATA *********************************

***1***   1500 PRINT "MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)   ";
          1510 INPUT N$
          1520 IF N$<>"N" THEN 670
***1***   1530 PRINT @0,2;
***1***   1540 PRINT "PROGRAM FINISHED"
          1550 END

          1560 REM ************ DIAGNOSTIC MESSAGES ******************************

***1***   1570 PRINT "ERROR IN LENGTH OF Z$"
          1580 PRINT "THE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          1590 GO TO 540
```

```
         1600 REM

+++2+++  1610 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY "B(I,2)
         1620 PRINT " CHARACTERS"
         1630 GO TO 940

         1640 REM

+++1+++  1650 IF I=7 THEN 1680
         1660 PRINT D$;" CANNOT BE LONGER THAN "B(I,2)" CHARACTERS"
         1670 GO TO 940
+++1+++  1680 PRINT "JTHIS COMMENT IS TOO LONG"
         1690 GO TO 940

         1700 REM
         1710 REM ************ B ARRAY (7,5) ************************************

         1720 DATA 8,2,4,0,0,12,6,0,0,0,18,4,2,0,0
         1730 DATA 22,4,4,0,0,26,1,1,0,0,27,1,1,0,0,28,43,5,0,0

         1740 REM
         1750 REM ************ C ARRAY (7,2) ************************************

         1760 DATA 1,11,13,38,51,8,60,10,71,32,103,31,134,31

         1770 REM
         1780 REM ************ J% ARRAY (10) AND F% ARRAY (68) ******************

         1790 DATA "2021222324"

         1800 REM

         1810 DATA "K941K942K945K951K952K953K954K955"
         1820 DATA "X302X545X546X547X548X549X550X551X552"

         1830 REM
         1840 REM ************ X$ ARRAY (170) ***********************************

         1850 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
         1860 DATA "SET TYPE/SET NUMBER/ACTION - IF DESTROYED ENTER AN X"
         1870 DATA "ACTION - IF RETURNED ENTER AN X"
         1880 DATA "COMMENT (43 CHARACTERS OR LESS)"

         1890 REM
         1900 REM ************ END OF PROGRAM ***********************************
```

FILE # 13

```
        1 GO TO 100
        4 GO TO 630
        8 GO TO 1450

+++1+++ 100 REM **** DATA SHEET # 11 - PROCESS DATA (DISASSEMBLY ROOM)
        110 REM **** DATA ENTRY - LOAD INPUT DATA TO TAPE
        120 REM **** VERSION 7 - 2/24/81
        130 REM

        140 PAGE
        150 INIT
        160 SET KEY
        170 DIM B(5,5),C(5,2),F$(68),J$(10),N$(1),X$(110),Z$(70)
        180 G$="
        190 H$="XX  XXXXXXXXXXXX
        200 PRINT "JIS THIS PROCESS DATA (DISASSEMBLY ROOM)?  (ENTER Y OR N) ";
        210 INPUT N$
        220 IF N$="Y" THEN 250
        230 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
        240 GO TO 1450
+++1+++ 250 READ B,C
        260 READ J$,F$
        270 READ Y$
        280 F$ F$&Y$
        290 DELETE Y$
        300 READ X$
        310 READ Y$
        320 X$ X$&Y$
        330 DELETE Y$
        340 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
        350 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
        360 INPUT U
        370 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK   ";
        380 INPUT T$
        390 T$=SEG(T$,1,3)
        400 FIND @U:2
        410 INPUT @U,13:Z$
        420 A$=SEG(Z$,4,2)
        430 B$=SEG(Z$,8,3)
        440 I$=SEG(Z$,8,9)
        450 IF A$="11" AND B$=T$ THEN 490
        460 PRINT "JTHIS IS THE WRONG DATA TAPE"
        470 PRINT "JTHIS TAPE IS FOR DATA SHEET #";A$;" FOR ";I$
        480 GO TO 1440
+++1+++ 490 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
        500 INPUT N$
        510 IF N$="Y" THEN 600
        520 IF U=33 THEN 570
+++1+++ 530 INPUT @U,6:T
        540 IF T=1 THEN 600
        550 INPUT @U,13:Z$
        560 GO TO 530
+++2+++ 570 IF TYP(0)=1 THEN 600
        580 INPUT @U,13:Z$
        590 GO TO 570
+++3+++ 600 Z$="RMA1110"&H$

        610 REM
```

```
          620 REM ************ BEGIN DATA INPUT ************************************

+++2+++   630 PRINT
          640 FOR I=1 TO 5
          650  D$=SEG(X$,C(I,1),C(I,2))
          660  C$=SEG(Z$,B(I,1),B(I,2))
          670  PRINT "ENTER ";D$;" ";C$
+++1+++   680  INPUT V$
          690  IF V$="" THEN 750
          700  Z1=LEN(V$)
          710  IF Z1>B(I,2) THEN 1560
          720  GO TO B(I,3) OF 790,880,980,1000,1060
          730  IF LEN(V$)<>B(I,2) THEN 1520
+++8+++   740  Z$=REP(V$,B(I,1),B(I,2))
+++1+++   750 NEXT I
          760 GO TO 1130

          770 REM
          780 REM ************ CHECK NO. 1 - CHECK STATION NUMBER *****************

+++1+++   790 IF V$="BF" THEN 740
          800 IF Z1=B(I,2) THEN 820
          810 V$="0"&V$
+++1+++   820 IF VAL(V$)<B(I,4) OR VAL(V$)>B(I,5) THEN 840
          830 GO TO 740
+++1+++   840 PRINT "STATION NUMBER MUST BE 1, 2, 3, 4, 5 OR BF"
 +++4+++  850 PRINT "REENTER ";D$;" ";C$
          860 GO TO 680

          870 REM ************ CHECK NO. 2 - ACCEPTABLE SET TYPES ****************

+++1+++   880 IF Z1<>B(I,2) THEN 1520
          890 K4=1
          900 FOR K=1 TO 17
          910  S$=SEG(F$,K4,4)
          920  IF V$=S$ THEN 740
          930  K4=K4+4
          940 NEXT K
          950 PRINT V$;" IS NOT A VALID SET TYPE"
          960 GO TO 850

          970 REM ************ CHECK NO. 3 - NOT USED

+++1+++   980 GO TO 740

          990 REM ************ CHECK NO. 4 - LEFT ZERO FILL ********************

+++1+++   1000 IF Z1=B(I,2) THEN 740
          1010 FOR K=Z1+1 TO B(I,2)
          1020  V$="0"&V$
          1030 NEXT K
          1040 GO TO 740

          1050 REM ************ CHECK NO. 5 - FILL IN COMMENT WITH BLANKS ********

+++1+++   1060 IF Z1=47 THEN 740
          1070 FOR K=Z1+1 TO 47
          1080  V$=V$&" "
          1090 NEXT K
          1100 GO TO 740
```

```
          1110 REM
          1120 REM ************ WRITE RECORD TO TAPE ******************************

+++1+++   1130 N=1
+++1+++   1140 Z1=LEN(Z$)
          1150 IF Z1<>70 THEN 1480
          1160 PRINT @41;Z$
          1170 PRINT @0,12;Z$
          1180 IF N=11 THEN 1410
          1190 PRINT "DO THERE ANOTHER COMMENT?  (ENTER Y OR N)   ";
          1200 INPUT N$
          1210 IF N$<>"Y" THEN 1360

          1220 REM
          1230 REM ************ PROCESS ADDITIONAL COMMENTS ********************

          1240 A$=SEG(J$,N,2)
          1250 Z$=REP(A$,6,2)
          1260 Z$=REP(G$,24,47)
+++1+++   1270 PRINT "DENTER COMMENT (47 CHARACTERS OR LESS)"
          1280 INPUT C$
          1290 Z1=LEN(C$)
          1300 IF Z1<=47 THEN 1330
          1310 PRINT "DTHIS COMMENT IS TOO LONG"
          1320 GO TO 1270
+++1+++   1330 Z$=REP(C$,24,Z1)
          1340 N=N+2
          1350 GO TO 1140
+++1+++   1360 A$="10"
          1370 Z$=REP(A$,6,2)
          1380 Z$=REP(G$,24,47)

          1390 REM
          1400 REM ************ CHECK END OF DATA *********************************

+++1+++   1410 PRINT "DMORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)   ";
          1420 INPUT N$
          1430 IF N$<>"N" THEN 630
+++1+++   1440 PRINT @0,21
+++2+++   1450 PRINT "PROGRAM FINISHED"
          1460 END

          1470 REM ************ DIAGNOSTIC MESSAGES ******************************

+++1+++   1480 PRINT "ERROR IN LENGTH OF Z$"
          1490 PRINT "DTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          1500 GO TO 600

          1510 REM

+++2+++   1520 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
          1530 PRINT " CHARACTERS"
          1540 GO TO 850

          1550 REM

+++1+++   1560 IF I=5 THEN 1590
          1570 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
          1580 GO TO 850
```

```
+++1+++  1590 PRINT "JTHIS COMMENT IS TOO LONG"
         1600 GO TO 850

         1610 REM
         1620 REM ************ B ARRAY (5,5) ************************************

         1630 DATA 8,2,4,0,0,12,6,0,0,0,18,4,2,0,0
         1640 DATA 22,2,1,1,5,24,47,5,0,0

         1650 REM
         1660 REM ************ C ARRAY (5,2) ************************************

         1670 DATA 1,11,13,38,51,8,60,14,75,31

         1680 REM
         1690 REM ************ J% ARRAY (10) AND F% ARRAY (68) ******************

         1700 DATA "2021222324"

         1710 REM

         1720 DATA "K941K942K945K951K952K953K954K955"
         1730 DATA "X302X545X546X547X548X549X550X551X552"

         1740 REM
         1750 REM ************ X$ ARRAY (110) ***********************************

         1760 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
         1770 DATA "SET TYPE/STATION NUMBER/COMMENT (47 CHARACTERS OR LESS)"

         1780 REM
         1790 REM ************ END OF PROGRAM ***********************************
```

FILE # 14

```
          1 GO TO 100
          4 GO TO 700
          8 GO TO 1410

++++++++  100 REM **** DATA SHEET # 12 - PROCESS DATA (RESIDUE AREA - PIGS)
          110 REM **** DATA ENTRY - LOAD INPUT DATA TO TAPE
          120 REM **** VERSION 7 - 2/24/81
          130 REM

          140 PAGE
          150 INIT
          160 SET KEY
          170 DIM B(5,5),C(5,2),F$(68),K$(1),X$(90),Z$(31)
          180 A1$="XX  XXXXXXXXX.XXXXXXXXXX"
          190 PRINT "JIS THIS PROCESS DATA (RESIDUE AREA - PIGS)? "
          200 PRINT "ENTER Y OR N   ";
          210 INPUT K$
          220 IF K$="Y" THEN 250
          230 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
          240 GO TO 1410
++++++++  250 READ B,C
          260 READ F$
          270 READ Y$
          280 F$=F$&Y$
          290 DELETE Y$
          300 READ X$
          310 READ Y$
          320 X$=X$&Y$
          330 DELETE Y$
          340 N=0
          350 J=0
          360 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
          370 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
          380 INPUT U
          390 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  ";
          400 INPUT T$
          410 T$=SEG(T$,1,3)
          420 FIND @U:3
          430 INPUT @U,13:Z$
          440 A$=SEG(Z$,4,2)
          450 B$=SEG(Z$,8,3)
          460 I=SEG(Z$,8,9)
          470 IF A$="12" AND B$=T$ THEN 510
          480 PRINT "JTHIS IS THE WRONG DATA TAPE"
          490 PRINT "JTHIS TAPE IS FOR DATA SHEET #";A$;" FOR ";I$
          500 GO TO 1400
++++++++  510 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
          520 INPUT K$
          530 IF K$="Y" THEN 620
          540 IF U=33 THEN 590
++++++++  550 INPUT @U,6:T
          560 IF T=1 THEN 620
          570 INPUT @U,13:Z$
          580 GO TO 550
++++++++  590 IF TYP(0)=1 THEN 620
          600 INPUT @U,13:Z$
          610 GO TO 590
++++++++  620 PRINT "JARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  ";
```

```
          630 INPUT K$
          640 IF K$="Y" THEN 670
          650 N$=SEG(Z$,30,2)
          660 N=VAL(N$)
+++2+++   670 Z$="RMA1210"&H$

          680 REM
          690 REM ************* BEGIN DATA INPUT ************************************

+++4+++   700 PRINT
          710 FOR I=1 TO 5
          720  IF J=0 THEN 740
          730  GO TO I OF 870,870,870,740,740
+++3+++   740  D$=SEG(X$,C(I,1),C(I,2))
          750  C$=SEG(Z$,B(I,1),B(I,2))
          760  PRINT "ENTER ";D$;" ";C$
+++1+++   770  INPUT V$
          780  IF V$<>"END" THEN 810
          790  J=0
          800  GO TO 1270
+++1+++   810  IF V$="" THEN 870
          820  Z1=LEN(V$)
          830  IF Z1>B(I,2) THEN 1520
          840  GO TO B(I,3) OF 910,1020,1040
          850  IF LEN(V$)<>B(I,2) THEN 1480
+++4+++   860  Z$=REP(V$,B(I,1),B(I,2))
+++4+++   870 NEXT I
          880 GO TO 1110

          890 REM
          900 REM ************* CHECK NO. 1 - ACCEPTABLE SET TYPE ******************

+++1+++   910 IF Z1<>B(I,2) THEN 1480
          920 K4=1
          930 FOR K=1 TO 17
          940  S$=SEG(F$,K4,4)
          950  IF V$=S$ THEN 860
          960  K4=K4+4
          970 NEXT K
          980 PRINT V$;" IS NOT A VALID SET TYPE"
+++2+++   990 PRINT "JREENTER ";D$;" ";C$
          1000 GO TO 770

          1010 REM ************* CHECK NO. 2 - NOT USED

+++1+++   1020 GO TO 860

          1030 REM ************* CHECK NO. 3 - LEFT ZERO FILL **********************

+++1+++   1040 IF Z1=B(I,2) THEN 860
          1050 FOR K=Z1+1 TO B(I,2)
          1060  V$="0"&V$
          1070 NEXT K
          1080 GO TO 860

          1090 REM
          1100 REM ************* TOTAL PIGS DECONNED ********************************

+++1+++   1110 N=N+1
          1120 V$=STR(N)
```

```
         1130 V$=REP("0",1,1)
         1140 IF N<10 THEN 1160
         1150 V$=SEG(V$,2,2)
+++1+++  1160 Z$=REP(V$,30,2)

         1170 REM
         1180 REM ************ WRITE RECORD TO TAPE ******************************

         1190 Z1=LEN(Z$)
         1200 IF Z1<>31 THEN 1440
         1210 PRINT @41;Z$
         1220 PRINT @0,12;Z$
         1230 J=1
         1240 GO TO 700

         1250 REM
         1260 REM ************ CHECK END OF DATA *********************************

+++1+++  1270 PRINT "ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)  ";
         1280 INPUT K$
         1290 IF K$="Y" THEN 700
         1300 PRINT "ENTER TOTAL PIGS DECONNED   ";
         1310 INPUT N1
         1320 IF N1=N THEN 1350
         1330 PRINT "THIS TOTAL DOES NOT AGREE WITH THE CALCULATED TOTAL - ";N
         1340 PRINT "PLEASE CHECK YOUR SHEET"
+++1+++  1350 PRINT "MORE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)   ";
         1360 INPUT K$
         1370 IF K$="N" THEN 1400
         1380 N=0
         1390 GO TO 700
+++2+++  1400 PRINT @0,2;
+++2+++  1410 PRINT "PROGRAM FINISHED"
         1420 END

         1430 REM ************ DIAGNOSTIC MESSAGES ******************************

+++1+++  1440 PRINT "ERROR IN LENGTH OF Z$"
         1450 PRINT "THE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
         1460 GO TO 670

         1470 REM

+++2+++  1480 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
         1490 PRINT " CHARACTERS"
         1500 GO TO 990

         1510 REM

+++1+++  1520 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
         1530 GO TO 990

         1540 REM
         1550 REM ************ B ARRAY (5,5) ************************************

         1560 DATA 8,2,3,0,0,12,6,0,0,0,18,4,1,0,0
         1570 DATA 22,4,3,0,0,26,4,3,0,0

         1580 REM
         1590 REM ************ C ARRAY (5,2) ************************************
```

```
1600 DATA 1,11,13,38,51,8,60,10,71,11

1610 REM
1620 REM ************* F% ARRAY (68) ************************************

1630 DATA "K941K942K945K951K952K953K954K955"
1640 DATA "X302X545X546X547X548X549X550X551X552"

1650 REM
1660 REM ************* X% ARRAY (90) ************************************

1670 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
1680 DATA "SET TYPE/SET NUMBER/SKID NUMBER"

1690 REM
1700 REM ************* END OF PROGRAM ***********************************
```

FILE # 15

```
          1 GO TO 100
          4 GO TO 650
          8 GO TO 1290

++++1+++  100 REM #### DATA SHEET # 13 - PROCESS DATA (RESIDUE AREA - DRUMS)
          110 REM #### DATA ENTRY - LOAD INPUT DATA TO TAPE
          120 REM #### VERSION 7 - 2/24/81
          130 REM

          140 PAGE
          150 INIT
          160 SET KEY
          170 DIM B(4,5),C(4,2),K$(1),X$(90),Z$(27)
          180 H$="XX  XXXXXXXXXXXXXXX"
          190 PRINT "JIS THIS PROCESS DATA (RESIDUE AREA - DRUMS)?"
          200 PRINT "ENTER Y OR N    ";
          210 INPUT K$
          220 IF K$<>"Y" THEN 250
          230 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
          240 GO TO 1290
++++1+++  250 READ B,C
          260 READ X$
          270 READ Y$
          280 X$=X$&Y$
          290 DELETE Y$
          300 N=0
          310 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
          320 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
          330 INPUT U
          340 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK    ";
          350 INPUT T$
          360 T$=SEG(T$,1,3)
          370 FIND @U:4
          380 INPUT @U,13:Z$
          390 A$=SEG(Z$,4,2)
          400 B$=SEG(Z$,8,3)
          410 I$=SEG(Z$,0,9)
          420 IF A$="13" AND B$=T$ THEN 460
          430 PRINT "JTHIS IS THE WRONG DATA TAPE"
          440 PRINT "JTHIS IS FOR DATA SHEET #";A$;", FOR ";I$
          450 GO TO 1280
++++1+++  460 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
          470 INPUT K$
          480 IF K$="Y" THEN 570
          490 IF U=33 THEN 540
++++1+++  500 INPUT @U,6:T
          510 IF T=1 THEN 570
          520 INPUT @U,13:Z$
          530 GO TO 500
++++1+++  540 IF TYP(0)=1 THEN 570
          550 INPUT @U,13:Z$
          560 GO TO 540
++++3+++  570 PRINT "JARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  ";
          580 INPUT K$
          590 IF K$<>"Y" THEN 620
          600 N$=SEG(Z$,26,2)
          610 N=VAL(N$)
++++2+++  620 Z$="KMA1310"&N$
```

```
          630 REM
          640 REM ************* BEGIN DATA INPUT ************************************

+++3+++   650 PRINT
          660 FOR I=1 TO 4
          670  D$=SEG(X$,C(I,1),C(I,2))
          680  C$=SEG(Z$,B(I,1),B(I,2))
          690  PRINT "ENTER "$D$I$" "$C$
+++1+++   700  INPUT V$
          710  IF V$="" THEN 770
          720  Z1=LEN(V$)
          730  IF Z1>B(I,2) THEN 1400
          740  GO TO B(I,3) OF 810,880,900,960
          750  IF LEN(V$)<>B(I,2) THEN 1360
+++5+++   760  Z$=REP(V$,B(I,1),B(I,2))
+++1+++   770 NEXT I
          780 GO TO 1010

          790 REM
          800 REM ************* CHECK NO. 1 - ACCEPTABLE DRUM KEYS ****************

+++1+++   810 IF Z1<>B(I,2) THEN 1360
          820 Q$=SEG(V$,1,1)
          830 IF Q$="F" THEN 760
          840 PRINT "$THE FIRST CHARACTER OF THE "$D$I$" MUST BE F"
+++2+++   850 PRINT "$REENTER "$D$I$" "$C$
          860 GO TO 700

          870 REM ************* CHECK NO. 2 - NOT USED

+++1+++   880 GO TO 760

          890 REM ************* CHECK NO. 3 - LEFT ZERO FILL ********************

+++2+++   900 IF Z1=B(I,2) THEN 760
          910 FOR K=Z1+1 TO B(I,2)
          920  V$="0"&V$
          930 NEXT K
          940 GO TO 760

          950 REM ************* CHECK NO. 4 - DRUM WEIGHT ************************

+++1+++   960 IF V$<>"NA" THEN 900
          970 V$="NA "
          980 GO TO 760

          990 REM
          1000 REM ************* TOTAL DRUMS ***************************************

+++1+++   1010 N=N+1
          1020 V$=STR(N)
          1030 V$=REP("0",1,1)
          1040 IF N<10 THEN 1060
          1050 V$=SEG(V$,2,2)
+++1+++   1060 Z$=REP(V$,26,2)

          1070 REM
          1080 REM ************* WRITE RECORD TO TAPE ******************************
```

```
1090 Z1=LEN(Z$)
1100 IF Z1<>27 THEN 1320
1110 PRINT @41;Z$
1120 PRINT @0,12;Z$

1130 REM
1140 REM ************ CHECK END OF DATA *********************************

1150 PRINT "ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   ";
1160 INPUT K$
1170 IF K$="Y" THEN 650
1180 PRINT "ENTER TOTAL DRUMS ";
1190 INPUT N1
1200 IF N1=N THEN 1230
1210 PRINT "THIS TOTAL DOES NOT AGREE WITH THE CALCULATED TOTAL - ";N
1220 PRINT "PLEASE CHECK YOUR SHEET"
1230 PRINT "MORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)   ";
1240 INPUT K$
1250 IF K$="N" THEN 1280
1260 N=0
1270 GO TO 650
1280 PRINT @0,2;
1290 PRINT "PROGRAM FINISHED"
1300 END

1310 REM ************ DIAGNOSTIC MESSAGES *********************************

1320 PRINT "ERROR IN LENGTH OF Z$"
1330 PRINT "THE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
1340 GO TO 620

1350 REM

1360 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
1370 PRINT " CHARACTERS"
1380 GO TO 850

1390 REM

1400 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
1410 GO TO 850

1420 REM
1430 REM ************ B ARRAY (4,5) ************************************

1440 DATA 8,2,3,0,0,12,6,0,0,0,18,5,1,0,0
1450 DATA 23,3,4,0,0

1460 REM
1470 REM ************ C ARRAY (4,2) ************************************

1480 DATA 1,11,13,36,51,11,63,11

1490 REM
1500 REM ********** X$ ARRAY (90) ************************************

1510 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
1520 DATA "DRUM NUMBER/DRUM WEIGHT"

1530 REM
```

```
1540 REM ********** END OF PROGRAM **********
```

FILE # 16

```
          1 GO TO 100
          4 GO TO 650
          8 GO TO 1290

+++1+++   100 REM **** DATA SHEET # 14 - PROCESS DATA (SPRAY DRYER)
          110 REM **** DATA ENTRY - LOAD INPUT DATA TO TAPE
          120 REM **** VERSION 7 - 2/24/81
          130 REM

          140 PAGE
          150 INIT
          160 SET KEY
          170 DIM B(4,5),C(4,2),K$(1),X$(90),Z$(27)
          180 N$="XX  XXXXXXXXXXXXXXX"
          190 PRINT "DIS THIS PROCESS DATA (SPRAY DRYER)?"
          200 PRINT "ENTER Y OR N   ";
          210 INPUT K$
          220 IF K$="Y" THEN 250
          230 PRINT "YOU ARE USING THE WRONG DATA ENTRY PROGRAM"
          240 GO TO 1290
+++1+++   250 READ B,C
          260 READ X$
          270 READ Y$
          280 X$=X$&Y$
          290 DELETE Y$
          300 N=0
          310 PRINT "INSERT THE DATA TAPE INTO UNIT 4924"
          320 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE   ";
          330 INPUT U
          340 PRINT "ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  ";
          350 INPUT I$
          360 I$=SEG(I$,1,3)
          370 FIND #U:5
          380 INPUT #U,13:Z$
          390 A$=SEG(Z$,1,2)
          400 B$=SEG(Z$,6,3)
          410 IF SEG(Z$,8,9)
          420 IF A$="14" AND B$=I$ THEN 460
          430 PRINT "THIS IS THE WRONG DATA TAPE"
          440 PRINT "THIS TAPE IS FOR DATA SHEET #"A$", FOR "I$
          450 GO TO 1280
+++1+++   460 PRINT "DIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
          470 INPUT K$
          480 IF K$="Y" THEN 570
          490 IF N<3 THEN 540
+++1+++   500 INPUT #U,3:I
          510 IF I=1 THEN 570
          520 INPUT #U,13:Z$
          530 GO TO 500
+++1+++   540 IF [illegible]=1 THEN 570
          550 INPUT #U,13:Z$
          560 N=N+1 :GO TO 500
+++1+++   570 PRINT "ARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  ";
          580 INPUT K$
          590 IF K$="Y" THEN 620
          600 N$=SEG(Z$,26,2)
          610 N=VAL(N$)
+++1+++   620 [illegible]
```

```
         630 REM
         640 REM ************ BEGIN DATA INPUT ************************************

+++3+++  650 PRINT
         660 FOR I=1 TO 4
         670  D$=SEG(X$,C(I,1),C(I,2))
         680  C$=SEG(Z$,B(I,1),B(I,2))
         690  PRINT "ENTER "|D$|" "|C$
+++4+++  700  INPUT V$
         710  IF V$="" THEN 770
         720  Z1=LEN(V$)
         730  IF Z1>B(I,2) THEN 1400
         740  GO TO B(I,3) OF 810,880,900,960
         750  IF LEN(V$)<>B(I,2) THEN 1360
+++5+++  760  Z$=REP(V$,B(I,1),B(I,2))
+++1+++  770 NEXT I
         780 GO TO 1010

         790 REM
         800 REM . ********** CHECK NO. 1 - ACCEPTABLE DRUM KEYS ***************

+++1+++  810 IF Z1<>C(I,2) THEN 1360
         820 Q$=SEG(V$,1,1)
         830 IF Q$="S"  IEN 760
         840 PRINT "|THE FIRST CHARACTER OF THE "|D$|" MUST BE S"
+++2+++  850 PRINT "|KEEN.ER "|D$|" "|C$
         860 GO TO 700

         870 REM ************ CHECK NO. 2 - NOT USED

+++1+++  880 GO TO 760

         890 REM ************ CHECK NO. 3 - LEFT ZERO FILL ********************

+++2+++  900 IF Z1=B(I,2) THEN 760
         910 FOR K=Z1+1 TO B(I,2)
         920  V$="0"&V$
         930 NEXT K
         940 GO TO 760

         950 REM ************ CHECK NO. 4 - DRUM WEIGHT ************************

+++1+++  960 IF V$<>"NA" THEN 900
         970 V$="NA "
         980 GO TO 760

         990 REM
         1000 REM ************ TOTAL DRUMS ***************************************

+++1+++  1010 N=N+1
         1020 V$=STR(N)
         1030 V1=REP("0",1,1)
         1040 IF N<10 THEN 1060
         1050 V$=SEG(V$,2,2)
+++2+++  1060 Z$=REP(V$,26,2)

         1070 REM
         1080 REM ************ WRITE RECORD TO TAPE ******************************
```

```
1090 Z1=LEN(Z$)
1100 IF Z1<> 27 THEN 1320
1110 PRINT @41;Z$
1120 PRINT @0,12;Z$

1130 REM
1140 REM ************* CHECK END OF DATA *********************************

1150 PRINT "ANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   ";
1160 INPUT K$
1170 IF K$="Y" THEN 650
1180 PRINT "ENTER TOTAL DRUMS ";
1190 INPUT N1
1200 IF N1=N THEN 1230
1210 PRINT "THIS TOTAL DOES NOT AGREE WITH THE CALCULATED TOTAL - ";N
1220 PRINT "PLEASE CHECK YOUR SHEET"
1230 PRINT "MORE DATA?  (ENTER Y OR N)  N WILL END PROGRAM)   ";
1240 INPUT K$
1250 IF K$="N" THEN 1280
1260 N=0
1270 GO TO 650
1280 PRINT @0,23;
1290 PRINT "PROGRAM FINISHED"
1300 END

1310 REM ************* DIAGNOSTIC MESSAGES *********************************

1320 PRINT "ERROR IN LENGTH OF Z$"
1330 PRINT "THE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
1340 GO TO 620

1350 REM

1360 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
1370 PRINT " CHARACTERS"
1380 GO TO 850

1390 REM

1400 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
1410 GO TO 850

1420 REM
1430 REM ************* B ARRAY (4,5) ***************************************

1440 DATA 8,2,3,0,0,12,6,0,0,0,18,5,1,0,0
1450 DATA 23,3,4,0,0

1460 REM
1470 REM ************* C ARRAY (4,2) ***************************************

1480 DATA 1,11,13,38,51,11,63,11

1490 REM
1500 REM ************* X$ ARRAY (90) ***************************************

1510 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
1520 DATA "DRUM NUMBER/DRUM WEIGHT"

1530 REM
```

```
1540 REM ************ END OF PROGRAM ************************************
```

FILE # 17

```
         1 GO TO 100
         4 GO TO 650
         8 GO TO 1290

+++1+++  100 REM **** DATA SHEET # 15 - PROCESS DATA (ELECTROSTATIC PRECIPITATOR)
         110 REM **** DATA ENTRY - LOAD INPUT DATA TO TAPE
         120 REM **** VERSION 7 - 2/24/81
         130 REM

         140 PAGE
         150 INIT
         160 SET KEY
         170 DIM B(4,5),C(4,2),K$(1),X$(90),Z$(27)
         180 H$="XX  XXXXXXXXXXXXXXX"
         190 PRINT "DIS THIS PROCESS DATA (ELECTROSTATIC PRECIPITATOR)?"
         200 PRINT "ENTER Y OR N  ";
         210 INPUT K$
         220 IF K$="Y" THEN 250
         230 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
         240 GO TO 1290
+++1+++  250 READ B,C
         260 READ X$
         270 READ Y$
         280 X$=X$&Y$
         290 DELETE Y$
         300 N=0
         310 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
         320 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
         330 INPUT U
         340 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  "
         350 INPUT T$
         360 T$=SEG(T$,1,3)
         370 FIND @U:6
         380 INPUT @U,13:Z$
         390 A$=SEG(Z$,4,2)
         400 B$=SEG(Z$,8,3)
         410 I$=SEG(Z$,8,9)
         420 IF A$="15" AND B$=T$ THEN 460
         430 PRINT "JTHIS IS THE WRONG DATA TAPE"
         440 PRINT "JTHIS TAPE IS FOR DATA SHEET #"A$", FOR "I$
         450 GO TO 1280
+++1+++  460 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
         470 INPUT K$
         480 IF K$="Y" THEN 570
         490 IF U=33 THEN 540
+++1+++  500 INPUT @U,6:T
         510 IF T=1 THEN 570
         520 INPUT @U,13:Z$
         530 GO TO 500
+++2+++  540 IF TYP(U)=1 THEN 570
         550 INPUT @U,13:Z$
         560 GO TO 540
+++3+++  570 PRINT "JARE YOU ENTERING DATA FROM A NEW PAGE?  (ENTER Y OR N)  ";
         580 INPUT K$
         590 IF K$="Y" THEN 620
         600 N$=SEG(Z$,26,2)
         610 N=VAL(N$)
+++2+++  620 Z$="KMA1510"&N$
```

```
         630 REM
         640 REM ************ BEGIN DATA INPUT ************************************

+++3+++  650 PRINT
         660 FOR I=1 TO 4
         670  D$=SEG(X$,C(I,1),C(I,2))
         680  C$=SEG(Z$,B(I,1),B(I,2))
         690  PRINT "ENTER "$D$$" "$C$
+++1+++  700  INPUT V$
         710  IF V$="" THEN 770
         720  Z1=LEN(V$)
         730  IF Z1>B(I,2) THEN 1400
         740  GO TO B(I,3) OF 810,880,900,960
         750  IF LEN(V$)<>B(I,2) THEN 1360
+++5+++  760  Z$=REP(V$,B(I,1),B(I,2))
+++1+++  770 NEXT I
         780 GO TO 1010

         790 REM
         800 REM ************ CHECK NO. 1 - ACCEPTABLE DRUM KEYS ****************

+++1+++  810 IF Z1<>B(I,2) THEN 1360
         820 Q$=SEG(V$,1,1)
         830 IF Q$="E" THEN 760
         840 PRINT "$THE FIRST CHARACTER OF THE "$D$$" MUST BE E"
++12+++  850 PRINT "$REENTER "$D$$" "$C$
         860 GO TO 700

         870 REM ************ CHECK NO. 2 - NOT USED

+++1+++  880 GO TO 760

         890 REM ************ CHECK NO. 3 - LEFT ZERO FILL ********************

+++2+++  900 IF Z1=B(I,2) THEN 760
         910 FOR K=Z1+1 TO B(I,2)
         920  V$="0"$V$
         930 NEXT K
         940 GO TO 760

         950 REM ************ CHECK NO. 4 - DRUM WEIGHT ************************

+++1+++  960 IF V$<>"NA" THEN 900
         970 V$="NA "
         980 GO TO 760

         990 REM
        1000 REM ************ TOTAL DRUMS ***************************************

+++1+++ 1010 N=N+1
        1020 V$=STR(N)
        1030 V$=REP("0",1,1)
        1040 IF N<10 THEN 1060
        1050 V$=SEG(V$,2,2)
+++1+++ 1060 Z$=REP(V$,26,2)

        1070 REM
        1080 REM ************ WRITE RECORD TO TAPE ******************************
```

```
1090 Z1=LEN(Z$)
1100 IF Z1<>27 THEN 1320
1110 PRINT @41;Z$
1120 PRINT @0,12;Z$

1130 REM
1140 REM ************ CHECK END OF DATA **********************************

1150 PRINT "JANY MORE DATA FROM THIS SHEET? (ENTER Y OR N)   ";
1160 INPUT K$
1170 IF K$="Y" THEN 650
1180 PRINT "JENTER TOTAL DRUMS ";
1190 INPUT N1
1200 IF N1=N THEN 1230
1210 PRINT "JTHIS TOTAL DOES NOT AGREE WITH THE CALCULATED TOTAL - ";N
1220 PRINT "PLEASE CHECK YOUR SHEET"
1230 PRINT "JMORE DATA?  (ENTER Y OR N   N WILL END PROGRAM)   ";
1240 INPUT K$
1250 IF K$="N" THEN 1280
1260 N=0
1270 GO TO 650
1280 PRINT @0,21;
1290 PRINT "PROGRAM FINISHED"
1300 END

1310 REM ************ DIAGNOSTIC MESSAGES ****************************

1320 PRINT "ERROR IN LENGTH OF Z$"
1330 PRINT "JTHE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
1340 GO TO 620

1350 REM

1360 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
1370 PRINT " CHARACTERS"
1380 GO TO 850

1390 REM

1400 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
1410 GO TO 650

1420 REM
1430 REM ************ B ARRAY (4,5) ************************************

1440 DATA 8,2,3,0,0,12,6,0,0,0,18,5,1,0,0
1450 DATA 23,3,4,0,0

1460 REM
1470 REM ************ C ARRAY (4,2) ************************************

1480 DATA 1,11,13,38,51,11,63,11

1490 REM
1500 REM ************ Z$ ARRAY (90) ************************************

1510 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
1520 DATA "DRUM NUMBER/DRUM WEIGHT"

1530 REM
```

```
1540 REM ************ END OF PROGRAM ************************************
```

```
          1 GO TO 100
          4 GO TO 620
          8 GO TO 1760

++++++++  100 REM ****   DATA SHEET # 16 - ID SET PLANT DOWNTIME DATA   ****
          110 REM            DATA ENTRY - LOAD INPUT DATA TO TAPE
          120 REM            VERSION 9 - 7/17/81
          130 REM
          140 REM            BY:  STEARNS-ROGER, INC.
          150 REM ****            M. E. MARTIN                          ****

          160 PAGE
          170 INIT
          180 SET KEY
          190 DIM B(12,5),C(12,2),J(2),N$(1),X$(250),Z$(101)
          200 N$="XX  XXXXXXXXXXXXXXXXXXXXXXXXXXXX    "
          210 PRINT "JIS THIS ID SETS PLANT DOWNTIME DATA?  (ENTER Y OR N)  ";
          220 INPUT N$
          230 IF N$="Y" THEN 260
          240 PRINT "JYOU ARE USING THE WRONG DATA ENTRY PROGRAM"
          250 GO TO 1760
++++++++  260 READ B,C
          270 READ X$
          280 FOR I=1 TO 5
          290  READ Y$
          300  X$=X$&Y$
          310 NEXT I
          320 DELETE Y$
          330 PRINT "JINSERT THE DATA TAPE INTO UNIT 4924"
          340 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
          350 INPUT U
          360 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK  ";
          370 INPUT T$
          380 T=-SEG(T$,1,3)
          390 FIND @U:1
          400 INPUT @U,13:Z$
          410 A$=SEG(Z$,4,2)
          420 B$=SEG(Z$,6,3)
          430 C=-SEG(Z$,8,9)
          440 IF A$="16" AND B$=T$ THEN 480
          450 PRINT "JTHIS IS THE WRONG DATA TAPE"
          460 PRINT "JTHIS TAPE IS FOR DATA SHEET #";A$;" FOR ";C$
          470 GO TO 1750
++++++++  480 PRINT "JIS THIS DATA FOR A NEW WEEK?  (ENTER Y OR N)  ";
          490 INPUT N$
          500 IF N$="Y" THEN 590
          510 IF U=33 THEN 560
++++++++  520 INPUT @U,6:T
          530 IF T=1 THEN 590
          540 INPUT @U,13:Z$
          550 GO TO 520
++++++++  560 IF (Y%<0)=1 THEN 590
          570 INPUT @U,13:Z$
          580 GO TO 560
++++++++  590 X$="EMD;&10"&N$

          600 REM
          610 REM ************ BEGIN DATA INPUT ************************************
```

```
+++4+++  620 PRINT
         630 FOR I=1 TO 12
         640  D$=SEG(X$,C(I,1),C(I,2))
         650  C$=SEG(Z$,B(I,1),B(I,2))
         660  PRINT "ENTER ";D$;" ";C$
+++1+++  670  INPUT V$
         680  IF V$="" THEN 740
         690  Z1=LEN(V$)
         700  IF Z1>B(I,2) THEN 1870
         710  GO TO B(I,3) OF 1010,1220,1250,1330,1380
+++2+++  720  IF LEN(V$)<>B(I,2) THEN 1830
+++5+++  730  Z$=REP(V$,B(I,1),B(I,2))
+++1+++  740 NEXT I

         750 REM
         760 REM ************ SUBROUTINE - CALC DT IN HOURS AND 2 DEC PLACES ***

         770 M=18
         780 FOR I=1 TO 2
         790  J$=SEG(Z$,M,2)
         800  K$=SEG(Z$,M+2,2)
         810  J(I)=VAL(J$)
         820  K=VAL(K$)
         830  J(I)=J(I)+K/60
         840  M=M+4
         850 NEXT I
         860 K=(J(2)-J(1))*100+0.5
         870 K=INT(K)
         880 K$=STR(K)
         890 K$=REP("",1,1)
         900 K1=LEN(K$)
         910 GO TO K1 OF 940,950,960,970
         920 K$=SEG(K$,2,4)
         93    TO 970
+++1+++  940 K$="0"&K$
+++1+++  950 K$="0"&K$
+++1+++  960 K$="0"&K$
+++2+++  970 Z$=REP(K$,41,4)
         980 GO TO 1560

         990 REM
         1000 REM ************ CHECK NO. 1 - LIMITS ******************************

+++2+++  1010 IF Z1<>B(I,2) THEN 1830
         1020 FOR K=1 TO Z1
         1030  E$=SEG(V$,K,1)
         1040  E1=ASC(E$)
         1050  IF E1>47 AND E1<58 THEN 1080
         1060  PRINT "THIS ENTRY MUST BE NUMERIC"
         1070  GO TO 1190
+++1+++  1080 NEXT K
         1090 V=VAL(V$)
         1100 IF I=4 THEN 1380
         1110 IF V<=B(I,4) AND V>=B(I,5) THEN 730
         1120 GO TO I OF 1180,1180,1180,1180,1180,1140,1180,1180,1140,1140,1140
         1130 GO TO I-11 OF 1180
+++4+++  1140 IF V=99 THEN 720
         1150 IF I=11 AND V=98 THEN 720
         1160 PRINT D$;" IS AN INVALID NUMBER"
```

```
          1170 GO TO 1190
++++9+++  1180 PRINT D$;" MUST BE IN THE RANGE OF ";B(I,4);" TO ";B(I,5)
++++1+++  1190 PRINT "JREENTER ";D$;" ";C$
          1200 GO TO 670

          1210 REM ********** CHECK NO. 2 - DATE ******************************

++++1+++  1220 IF Z1<>B(I,2) THEN 1830
          1230 GO TO 1460

          1240 REM ********** CHECK NO. 3 - LEFT ZERO FILL. ********************

++++1+++  1250 IF Z1=B(I,2) THEN 1290
          1260 FOR K=Z1+1 TO B(I,2)
          1270  V$=-"0"&V$
          1280 NEXT K
++++1+++  1290 IF I<6 THEN 730
          1300 GO TO 1010

          1310 REM
          1320 REM ********** CHECK NO. 4 - CHECK Y OR N ***********************

++++1+++  1330 IF V$="Y" OR V$="N" THEN 730
          1340 PRINT D$;" MUST BE EITHER Y OR N"
          1350 GO TO 1190

          1360 REM
          1370 REM ********** CHECK NO. 5 - CHECK TIMES ************************

++++2+++  1380 IF V<B(I,4) OR V>B(I,5) THEN 1180
          1390 P$=SEG$(Z$,16,4)
          1400 V2=VAL(P$)
          1410 IF V<V2 THEN 730
          1420 PRINT "JSTOP TIME MUST BE LATER THAN START TIME.  REENTER RECORD"
          1430 GO TO 620

          1440 REM
          1450 REM ********** CHECK FOR BLANK DATA SHEET ***********************

++++1+++  1460 PRINT "JIS THERE DOWNTIME DATA TO BE ENTERED?  (ENTER Y OR N)  ";
          1470 INPUT N$
          1480 IF N$<>"N" THEN 730
          1490 Z$=REP$("4",6,1)
          1500 Z$=REP$(V$,12,6)
          1510 Z$=REP$("0800160ON99999999999050000",18,27)
          1520 Z$=Z$&"NO DOWNTIME"
          1530 GO TO 1660

          1540 REM
          1550 REM ********** ENTER COMMENT ************************************

++++1+++  1560 PRINT "ENTER COMMENT (57 CHARACTERS OR LESS)"
          1570 INPUT V$
          1580 IF V$="" THEN 1660
          1590 Z1=LEN(V$)
          1600 IF Z1<=57 THEN 1630
          1610 PRINT "JTHIS COMMENT IS TOO LONG"
          1620 GO TO 1560
++++1+++  1630 Z$=Z$&V$
```

```
          1640 REM
          1650 REM ************ WRITE RECORD TO TAPE ******************************

+++2+++   1660 PRINT @41;Z$
          1670 PRINT @0,12;Z$
          1680 Z$=REP(" ",6,1)
          1690 Z$=SEG(Z$,1,44)

          1700 REM
          1710 REM ************ CHECK END OF DATA *********************************

          1720 PRINT "SMOKE DATA?  (ENTER Y OR N;  N WILL END PROGRAM)  ";
          1730 INPUT N$
          1740 IF N$="Y" THEN 620
+++1+++   1750 PRINT @0,21;
+++2+++   1760 PRINT "PROGRAM FINISHED"
          1770 END

          1780 REM ************ DIAGNOSTIC MESSAGES ***********************************

          1790 PRINT "ERROR IN LENGTH OF Z$"
          1800 PRINT "THE LAST ENTRY WAS DISREGARDED.  REENTER ENTIRE RECORD"
          1810 GO TO 620

          1820 REM

+++3+++   1830 PRINT "THE STRING MUST BE COMPLETELY FILLED - EXACTLY ";B(I,2);
          1840 PRINT " CHARACTERS"
          1850 GO TO 1190

          1860 REM

+++1+++   1870 PRINT D$;" CANNOT BE LONGER THAN ";B(I,2);" CHARACTERS"
          1880 GO TO 1190

          1890 REM
          1900 REM ************ B ARRAY (12,5) ************************************

          1910 DATA 8,2,3,0,0,12,6,2,0,0,18,4,1,0,2400
          1920 DATA 22,4,1,0,2400,26,1,4,0,0,27,2,3,1,25,29,2,3,0,99
          1930 DATA 31,2,3,0,99,33,2,3,0,39,35,2,3,1,36,37,2,3,1,14
          1940 DATA 39,2,3,1,6

          1950 REM
          1960 REM ************ C ARRAY (12,2) ************************************

          1970 DATA 1,11,13,38,51,10,62,9,72,21,93,16,110,24,134,26,174,18
          1980 DATA 193,12,206,17,223,20

          1990 REM
          2000 REM ************ X$ ARRAY (250) ************************************

          2010 DATA "PAGE NUMBER/DATE OF THE SAMPLE COLLECTION (DDMMYY)"
          2020 DATA "START TIME/STOP TIME/SIMULTANEOUS (Y OR N)"
          2030 DATA "SUBSYSTEM NUMBER/PRIMARY COMPONENT NUMBER"
          2040 DATA "SECONDARY COMPONENT NUMBER"
          2050 DATA "INSPECTIVE ACTION/FAILURE MODE/CORRECTIVE ACTION"
          2060 DATA "EFFECT ON PRODUCTION"

          2070 REM
```

2080 REM ********** END OF PROGRAM **********

FILE # 1

```
      100 INIT
      110 PAGE
      120 PRINT "DIRECTORY FOR ID SETS DATA PRINT PROGRAMS"
      130 PRINT "          VERSION 9 - 8/28/81"
      140 PRINT
      150 PRINT " DATA"
      160 PRINT "SHEET #       CONTENTS"
      170 PRINT "--------------------"
      180 PRINT "     1         ANALYST AND LAB COORD WORK SHEET (H,CK,CN,PB,T)"
      190 PRINT "     2         ANALYST AND LAB COORD WORK SHEET (AS)"
      200 PRINT "     3         ANALYST AND LAB COORD WORK SHEET (GB)"
      210 PRINT "     4         ANALYST AND LAB COORD WORK SHEET (L)"
      220 PRINT "     9         ANALYTICAL DATA SHEET (MIRAN 80)"
      230 PRINT "    10         BLDG 1611 - RECEIPT INSPECTION"
      240 PRINT "    11         PROCESS DATA - DISASSEMBLY ROOM"
      250 PRINT "    12         PROCESS DATA - RESIDUE AREA (PIBS)"
      260 PRINT "    13         PROCESS DATA - RESIDUE AREA (DRUMS)"
      270 PRINT "    14         PROCESS DATA - SPRAY DRYER"
      280 PRINT "    15         PROCESS DATA - ELECTROSTATIC PRECIPITATOR"
      290 PRINT "    16         PLANT DOWNTIME DATA"
***1*** 300 PRINT "ENTER DATA SHEET NUMBER  ";
      310 INPUT F
      320 IF F>4 THEN 350
      330 F=2
      340 GO TO 370
***1*** 350 IF F<9 OR F>16 THEN 390
      360 F=F-6
***1*** 370 FIND F
      380 OLD
***1*** 390 PRINT "INVALID FILE NUMBER, REENTER"
      400 GO TO 300
      410 END
```

FILE # 2

```
100 REM ####       PRINT PROGRAM FOR DATA SHEETS 1 THRU 8       ####
110 REM               ANALYST AND LAB COORDINATOR DATA
120 REM               FOR H, CK, CN, PS, AS, GB AND L
130 REM                     VERSION 9 - 9/22/81
140 REM
150 REM ####                    M. E. MARTIN                    ####

160 INIT
170 PRINT @32,2&10
180 PRINT @41,15;150
190 PRINT "LINSERT THE DATA TAPE INTO UNIT 4924"
200 PRINT "JPRESS ENTER KEY TO BEGIN"
210 INPUT B$
220 DIM A(16),A$(256),I$(14),L$(132),O$(74)

230 REM
240 REM #### INITIALIZE ARRAYS FOR CHECKING AGENTS

250 U1=11
260 U2=41
270 O$="
280 O$=O$&O$
290 Z$="
300 Y$="
310 READ I$
320 A(1)=1
330 A(2)=2
340 FOR I=3 TO 16
350  A(I)=0
360 NEXT I
370 J0=0
380 FIND @U1:0
390 FIND @U1:1
400 INPUT @U1:A$
410 INPUT @U1,6:Z0

420 REM ############ CHECK TO SEE IF READ FOR X AGENT IS NECESSARY
430 REM              FLAG IS SET TO 0 IF NO, 1 IF YES

***1***  440 INPUT @U1:A$
450 P$=SEG(A$,18,2)
460 FOR I=1 TO 7
470  N$=SEG(I$,2*I-1,2)
480  IF N$=P$ THEN 520
490 NEXT I
500 PRINT "JTHIS IS THE WRONG DATA TAPE"
510 GO TO 740
***1***  520 INPUT @U1,6:Z0
530 IF Z0=2 THEN 440
***10**  540 J0=J0+1
550 IF J0>14 THEN 740
560 IF A(J0)=0 THEN 540
570 J2=A
590 FIND @U1:0
600 FIND @U1:1
609 INPUT @U1:A$
***2***  610 INPUT @U1:A$
```

```
+++6+++  620 D$=SEG(A$,18,2)
         630 C$=SEG(A$,6,1)
         640 INPUT @01,6;Z0
         650 D0=1
         660 IF D0=(J0+1)/2 THEN 700
         670 IF D0=J0/2 THEN 700
+++2+++  680 IF Z0=2 THEN 610
         690 GO TO 540
+++2+++  700 GO TO J0 OF 700,1440
         710 INPUT @11,6;Z0
         720 IF Z0<>2 THEN 740
         730 GO TO 610
+++3+++  740 PRINT "JEND OF PROGRAM"
         750 END

         760 REM
         770 REM ************ ANALYST WORK SHEET **********************************

+++1+++  780 IF J2=0 THEN 800
         790 GO TO 970
+++6+++  800 E$="ANALYST WORK SHEET"
         810 PRINT @41:"L                                          "JE$J"J"
         820 E$="AGENT "$D$
         830 PRINT @41:"                                             "JE$J"J"
         840 G$=SEG(A$,10,2)
         850 H$=SEG(A$,12,2)
         860 I$=SEG(A$,14,2)
         870 J$=SEG(A$,16,2)
         880 K$=SEG(A$,20,1)
         890 E$="DAY MO YR        SERIAL NUMBER
         900 PRINT @41:E$J"                  COMPUTER PAGE "I0$
         910 PRINT @41:" "JG$J" "JH$J" "JI$J" "JJ$J"              "JK$J"J"
         920 E$="CONTROL  CALIB      PEAK     AGENT          BUBBLER
         930 PRINT @41:E$J"CONC    ANAL    ANAL"
         940 E$="NUMBER  STD CONC  HEIGHT  CONC  DILUTION   VOLUME
         950 PRINT @41:E$J"SAMPLE  TIME    INIT  COMMENTSJ"
         960 J2=1
+++1+++  970 E$=SEG(A$,10,2)
         980 IF E$<>G$ THEN 800
         990 E$=SEG(A$,12,2)
        1000 IF E$<>H$ THEN 800
        1010 E$=SEG(A$,14,2)
        1020 IF E$<>I$ THEN 800
        1030 E$=SEG(A$,16,2)
        1040 IF E$<>J$ THEN 800
        1050 E$=SEG(A$,20,1)
        1060 IF E$<>K$ THEN 800
        1070 L$=0$
        1080 M$=SEG(A$,21,6)
        1090 L$=REP(M$,1,6)
        1100 M$=SEG(A$,27,7)
        1110 IF M$<>"NA     " THEN 1130
        1120 M$="   NA  "
+++1+++ 1130 L$=REP(M$,9,7)
        1140 M$=SEG(A$,40,7)
        1150 L$=REP(M$,18,7)
        1160 M$=SEG(A$,25,7)
        1170 IF M$<>"NA     " THEN 1190
        1180 M$="   NA  "
+++1+++ 1190 L$=REP(M$,27,7)
```

```
         1200 M$=SEG(A$,62,7)
         1210 IF M$<>"NA      " THEN 1230
         1220 M$="   NA  "
+++1+++  1230 L$=REP(M$,35,7)
         1240 M$=SEG(A$,69,7)
         1250 IF M$<>"NA      " THEN 1270
         1260 M$="   NA  "
+++1+++  1270 L$=REP(M$,44,7)
         1280 M$=SEG(A$,76,7)
         1290 IF M$<>"NA      " THEN 1310
         1300 M$="   NA  "
+++1+++  1310 L$=REP(M$,53,7)
         1320 M$=SEG(A$,83,4)
         1330 IF M$<>"NA  " THEN 1350
         1340 M$=" NA "
+++1+++  1350 L$=REP(M$,62,4)
         1360 M$=SEG(A$,87,3)
         1370 L$=REP(M$,69,3)
         1380 U$=""
         1390 IF Z0=2 THEN 2410
         1400 PRINT @41:L$;U$
         1410 GO TO 680

         1420 REM
         1430 REM ************ LAB DATA COORDINATOR SHEET ***********************

+++1+++  1440 IF J2=0 THEN 1460
         1450 GO TO 1660
+++6+++  1460 E$="LAB DATA COORDINATOR WORK SHEET"
         1470 PRINT @41:"L                                    ";E$;"J"
         1480 PRINT @41:"                                                AGENT ";D$
         1490 PRINT @41:
         1500 G$=SEG(A$,10,2)
         1510 H$=SEG(A$,12,2)
         1520 I$=SEG(A$,14,2)
         1530 J$=SEG(A$,16,2)
         1540 K$=SEG(A$,112,4)
         1550 E$="DAY MO YR"
         1560 F$="                    COMPUTER PAGE ";G$
         1570 PRINT @41:E$;"                                  SET TYPE";F$
         1580 E$="
         1590 PRINT @41:" ";H$;" ";I$;" ";J$;E$;K$
         1600 PRINT @41: USING "71T,13A";"-REANALYSIS--"
         1610 E$="CONTROL              --TIME---    AIR   CONTROL   "
         1620 PRINT @41:E$;"CONC       CONC       CONC      CONC"
         1630 E$="NUMBER  AGT LOC PURP STRT STOP   FLOW   CONC      "
         1640 PRINT @41:E$;"MEAS       AIR       MEAS      AIR      COMMENTS J"
         1650 J2=1
+++1+++  1660 E$=SEG(A$,10,2)
         1670 IF E$<>G$ THEN 1460
         1680 E$=SEG(A$,12,2)
         1690 IF E$<>H$ THEN 1460
         1700 E$=SEG(A$,14,2)
         1710 IF E$<>I$ THEN 1460
         1720 E$=SEG(A$,16,2)
         1730 IF E$<>J$ THEN 1460
         1740 E$=SEG(A$,112,4)
         1750 IF E$<>K$ THEN 1460
         1760 IF C$="2" THEN 680
         1770 IF C$="3" THEN 2120
```

```
          1780 L$=0$$*
          1790 M$=SEG(A$,21,6)
          1800 L$=REP(M$,1,6)
          1810 M$=SEG(A$,18,2)
          1820 L$=REP(M$,9,2)
          1830 M$=SEG(A$,116,2)
          1840 L$=REP(M$,13,2)
          1850 M$=SEG(A$,118,2)
          1860 L$=REP(M$,18,2)
          1870 M$=SEG(A$,120,4)
          1880 L$=REP(M$,22,4)
          1890 M$=SEG(A$,124,4)
          1900 L$=REP(M$,27,4)
          1910 M$=SEG(A$,90,7)
          1920 IF M$<>"NA      " THEN 1940
          1930 M$="    NA    "
+++1+++   1940 L$=REP(M$,32,7)
          1950 M$=SEG(A$,97,6)
          1960 IF M$<>"NA      " THEN 1980
          1970 M$="  NA    "
+++1+++   1980 L$=REP(M$,41,6)
          1990 M$=SEG(A$,76,7)
          2000 IF M$<>"NA      " THEN 2020
          2010 M$="    NA    "
+++1+++   2020 L$=REP(M$,49,7)
          2030 M$=SEG(A$,103,9)
          2040 IF M$<>"NA        " THEN 2060
          2050 M$="    NA    "
+++1+++   2060 L$=REP(M$,58,9)
          2070 L$=REP("                    ",67,17)

          2080 REM

          2090 GO TO 2000

          2100 REM
          2110 REM ************ REANALYSIS DATA ***********************************

+++1+++   2120 L$=0$$*
          2130 M$=SEG(A$,21,6)
          2140 L$=REP(M$,1,6)
          2150 M$=SEG(A$,18,2)
          2160 L$=REP(M$,9,2)
          2170 M$=SEG(A$,116,2)
          2180 L$=REP(M$,13,2)
          2190 M$=SEG(A$,118,2)
          2200 L$=REP(M$,18,2)
          2210 M$=SEG(A$,120,4)
          2220 L$=REP(M$,22,4)
          2230 M$=SEG(A$,124,4)
          2240 L$=REP(M$,27,4)
          2250 M$=SEG(A$,90,7)
          2260 IF M$<>"NA      " THEN 2280
          2270 M$="    NA    "
+++1+++   2280 L$=REP(M$,32,7)
          2290 L$=REP("                    ",49,18)
          2300 M$=SEG(A$,76,7)
          2310 IF M$<>"NA      " THEN 2330
          2320 M$="    NA    "
+++1+++   2330 L$=REP(M$,69,7)
```

```
          2340 M$=SEG(A$,103,9)
          2350 IF M$<>"NA       " THEN 2370
          2360 M$="     NA"
+++1+++   2370 L$=REP(M$,77,9)
          2380 GO TO 2000

          2390 REM
          2400 REM ************ ANALYST COMMENTS **********************************

+++1+++   2410 Z6=0
          2420 IF Z0<>2 THEN 2470
          2430 INPUT @U1:A$
          2440 Z6=1
          2450 INPUT @U1,6:Z0

          2460 REM  IF Z0<>2 THEN 150

+++1+++   2470 B$=SEG(A$,6,2)
          2480 Q9=VAL(B$)
          2490 IF Q9<20 OR Q9>29 THEN 2530
          2500 IF Q9>24 THEN 2560
          2510 U$=SEG(A$,34,58)
          2520 GO TO 2650
+++1+++   2530 PRINT @41:L$
          2540 IF Z0<>2 AND Z6<>1 THEN 540
          2550 GO TO 620
+++1+++   2560 PRINT @41:L$
+++1+++   2570 IF Z0<>2 THEN 540
          2580 INPUT @U1:A$
          2590 INPUT @U1,6:Z0
          2600 B$=SEG(A$,6,2)
          2610 Q9=VAL(B$)
          2620 IF Q9<20 OR Q9>29 THEN 620
          2630 GO TO 2570

          2640 REM

+++1+++   2650 PRINT @41:L$;U$
+++2+++   2660 IF Z0<>2 THEN 540
          2670 INPUT @U1:A$
          2680 INPUT @U1,6:Z0
          2690 B$=SEG(A$,6,2)
          2700 Q9=VAL(B$)
          2710 IF Q9<20 THEN 620
          2720 IF Q9>29 THEN 620
          2730 IF Q9>24 THEN 2660
          2740 U$=SEG(A$,34,58)
          2750 PRINT @41: USING "7ST,58A":U$
          2760 IF Z0<>2 THEN 540
          2770 GO TO 2660

          2780 REM
          2790 REM ************ LAB DATA COORDINATOR COMMENTS ********************

+++3+++   2800 Z6=0
          2810 IF Z0<>2 THEN 2860
          2820 INPUT @U1:A$
          2830 Z6=1
          2840 INPUT @U1,6:Z0
```

```
          2850 REM IF Z0<>2 THEN 150

+++1+++   2860 B$=SEG(A$,6,2)
          2870 Q9=VAL(B$)
          2880 IF Q9<20 OR Q9>29 THEN 2940
          2890 IF Q9<25 AND Z0<>2 THEN 2940
          2900 IF Z0<>2 AND Z6<>1 THEN 540
          2910 IF Q9<25 THEN 2000
          2920 M$=SEG(A$,34,45)
          2930 GO TO 2980
+++2+++   2940 PRINT @41;L$
          2950 IF Z0<>2 AND Z6<>1 THEN 540
          2960 GO TO 620

          2970 REM

+++1+++   2980 PRINT @41;L$;M$
+++2+++   2990 IF Z0<>2 THEN 540
          3000 INPUT @01;A$
          3010 INPUT @01,6;Z0
          3020 B$=SEG(A$,6,2)
          3030 Q9=VAL(B$)
          3040 IF Q9<20 OR Q9>29 THEN 620
          3050 IF Q9<25 THEN 2990
          3060 M$=SEG(A$,34,45)
          3070 PRINT @41; USING "87T,45A";M$
          3080 IF Z0<>2 THEN 540
          3090 GO TO 2990

          3100 REM
          3110 REM ************ I$ (14) - AGENTS **********************************

          3120 DATA "H CKCNPST L GBL "

          3130 REM ********************** END OF PROGRAM ***************************
```

FILE # 3

```
          10 REM   MIRAN PRINT PROGRAM
          20 REM   Computer Sciences Corporation
          30 REM   Isaac Willy Traxler
          40 REM   4 - 27 - 82

          100 INIT
          110 GOSUB 1000
          120 H$="PL"
          130 FOR I1=1 TO 6
          140  S$=SEG(Z$,I1,1)
          150  GOSUB 2000
          160 NEXT I1
          170 H$="QL"
          180 FOR I1=1 TO 6
          190  S$=SEG(Z$,I1,1)
          200  GOSUB 2000
          210 NEXT I1
          220 PRINT @U4:"LL"
          230 PRINT @U3:"**** NORMAL END OF PROGRAM ****"
          240 END
+++1+++   300 PRINT @U3:"GWGRGOGNGGG GDGAGTGAG GTGAGPGEG"
          310 PRINT @U3:"**** ABNORMAL END OF PROGRAM ****"
          320 END

          999 REM ROUTINE TO INITIALIZE ARRAYS AND PROMPT USER FOR DATA TAPE
-------------------------------------------------------------------------------

---1---   1000 PAGE
          1010 U1=33
          1020 U2=11
          1030 U3=32
          1040 U4=41
          1050 PRINT @U4:
          1060 DIM H$(2),S$(1),Z$(6)
          1070 DIM I$(110),P$(111),B$(110)
          1080 DIM L(9,3)
          1090 PRINT @U3:"JINSERT DATA TAPE INTO EXTERNAL TAPE DRIVE"
          1100 PRINT @U3:"2K"
          1110 Z$="123456"
          1120 T$="
          1130 B$=T$
          1140 FOR I=1 TO 10
          1150  B$=B$&T$
          1160 NEXT I
          1170 FOR I=1 TO 9
          1180  READ L(I,1),L(I,2),L(I,3)
          1190 NEXT I
          1200 RETURN
          1500 DATA 37,7,20
          1510 DATA 44,7,30
          1520 DATA 54,7,49
          1530 DATA 61,7,59
          1540 DATA 71,7,78
          1550 DATA 78,7,88
          1560 DATA 51,3,41
          1570 DATA 68,3,70
```

```
          1580 DATA 85,3,99

          1999 REM ROUTINE PRINT RECORD
-------------------------------------------------------------------------------
---2---   2000 FIND @U2:1
          2010 INPUT @U2:I$
          2020 I$=SEG(I$,1,5)
          2030 IF I$<>"RMA09" THEN 300
          2040 C1=0
          2050 P0=0
+++3+++   2100 INPUT @U2,6:E1,E2
          2110 IF E1<>2 THEN 2240
          2120 INPUT @U2:I$

          2125 REM CHECK PURPOSE

          2130 T$=SEG(I$,22,2)
          2140 IF T$<>H$ THEN 2100

          2145 REM CHECK SERIAL NUMBER

          2150 T$=SEG(I$,24,1)
          2160 IF T$<>S$ THEN 2100

          2165 REM GET PAGE NUMBER

          2170 T$=SEG(I$,8,2)
          2180 P1=VAL(T$)
          2190 IF P0<>0 AND P0=P1 THEN 2220
          2200 P0=P1
          2210 GOSUB 3000
+++1+++   2220 GOSUB 4000
          2230 GO TO 2100
+++1+++   2240 RETURN

          2999 REM ROUTINE TO PRINT HEADING AT TOP OF EACH SHEET
-------------------------------------------------------------------------------
---1---   3000 PRINT @U4:"L"
          3010 PRINT @U4: USING "45X,21A,/":"ANALYTICAL DATA SHEET"
          3020 PRINT @U4: USING "52X,8A":"MIRAN 80"
          3030 T$=SEG(I$,20,2)
          3040 PRINT @U4: USING "L,51X,9A,2A":"LOCATION",T$
          3043 T$="MIRAN SERIAL NO."
          3046 U$="SET TYPE"
          3050 PRINT @U4: USING "L,33X,16A,21A,8A":"DAY MO YR",T$,U$
          3060 T$=SEG(I$,12,6)
          3070 T$=REP(" ",3,0)
          3080 T$=REP(" ",6,0)
          3090 U$=SEG(I$,25,4)
          3100 U$=REP("-",2,0)
          3110 PRINT @U4: USING "34X,8A,15X,A,14X,5A":T$,S$,U$
          3120 PRINT @U4: USING "L,L,53X,13A":"PARTS/MILLION"
          3130 PRINT @U4: USING "2L,20T,24A,S":"------CHLOROPICRIN------"
          3135 PRINT @U4: USING "5X,24A,S":"--------PHOSGENE--------"
          3140 PRINT @U   USING "5X,26A":"--------CHLOROFORM--------"
          3146 U$="SET TYPE"
```

```
         3150 IF H$<>"FL" THEN 3190
         3160 PRINT @U4; USING 3170;"PUR","TIME"
         3170 IMAGE 3A,5X,11A,3("1 HR AVG     PEAK    INIT     "),/
         3180 GO TO 3210
+++1+++  3190 PRINT @U4; USING 3200;"PUR","TIME"
         3200 IMAGE 3A,5X,11A,3(" TARGET     FOUND   INIT     "),/
+++1+++  3210 RETURN

         3999 REM ROUTINE TO PRINT OUT DATA AND COMMENT RECORDS
-------------------------------------------------------------------------------

---1---  4000 T$=SEG(I$,6,1)
         4010 IF T$="1" THEN 4150

         4020 REM   COMMENT RECORD

         4030 P$=B$
         4040 T$=SEG(I$,29,8)
         4050 T$=REP("-",5,0)
         4060 P$=REP(T$,7,9)
         4070 T$=SEG(I$,37,68)
         4080 P$=REP(T$,22,68)
         4090 IF C1=1 THEN 4110
         4100 P$=REP("J",1,0)
+++1+++  4110 PRINT @U4;P$
         4120 C1=1
         4130 RETURN

         4140 REM    DATA RECORD

+++1+++  4150 P$=B$
         4160 T$=SEG(I$,22,2)
         4170 P$=REP(T$,1,2)
         4180 T$=SEG(I$,29,8)
         4190 T$=REP("-",5,0)
         4200 P$=REP(T$,7,9)
         4210 FOR I=1 TO 9
         4220  T$=SEG(I$,L(I,1),L(I,2))
         4230  P$=REP(T$,L(I,3),L(I,2))
         4240 NEXT I
         4250 IF C1<>1 THEN 4280
         4260 P$=REP("J",1,0)
         4270 C1=0
+++1+++  4280 PRINT @U4;P$
         4290 RETURN
```

FILE # 4

```
          100 REM ****      PRINT PROGRAM FOR DATA SHEET #10      ****
          110 REM           BLDG 1611 RECEIPT INSPECTION DATA
          120 REM                 VERSION 8 - 06/08/81
          130 REM
          140 REM             BY:  STEARNS-ROGER, INC.
          150 REM ****             M. R. HERBERT/M. E. MARTIN     ****

          160 INIT
          170 PAGE
          180 DIM B$(2),D$(2),M$(2),Y$(2),J$(2),K$(40),P$(80),R$(70),T$(2)
          190 PRINT "        PROGRAM TO PRINT"
          200 PRINT "BLDG 1611 RECEIPT INSPECTION DATA"

          210 REM "JREMOVE PROGRAMMED TAPE FROM UNIT"

          220 PRINT "INSERT DATA TAPE IN UNIT 4924"
          230 PRINT "JDO YOU WANT TO USE THE HARD COPIER? "
          240 PRINT "ENTER (Y OR N) ";
          250 INPUT A$
          260 M=54 :
          270 DIM A$(1)
          280 IF A$<>"Y" THEN 310
          290 M=34
          300 PRINT "JMAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE"
+++1+++   310 PRINT "JJENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
          320 INPUT U
          330 FIND @U:1
          340 PAGE
          350 P=0
          360 C=0
          370 K$="
          380 P$=" "
          390 B$=" "
          400 ON EOF (0) THEN 1110
          410 IF U=33 THEN 440
          420 INPUT @U,6:T1
          430 IF T1=1 THEN 1110
+++1+++   440 INPUT @U,13:R$
+++1+++   450 IF U=33 THEN 480
          460 INPUT @U,6:T1
          470 IF T1=1 THEN 1110
+++1+++   480 INPUT @U,13:R$
          490 J$=SEG(R$,8,2)
          500 T$=SEG(R$,4,2)
          510 IF T$<>"10" THEN 1200
          520 IF B$<>" " THEN 550
          530 B$=J$
          540 GO TO 560
++++1++   550 IF J$=B$ THEN 570
++++1+++  560 GOSUB 820
++++1++   570 P$=K$&R$

          580 REM *** FORMAT DETAIL LINE AND PRINT ***

          590 U$=SEG(R$,18,1)
          600 P$=REP(U$,1,1)
          610 U$=SEG(R$,19,3)
```

```
          620 P$=REP(U$,3,3)
          630 U$=SEG(R$,22,4)
          640 P$=REP(U$,7,4)
          650 I$=SEG(R$,6,1)
          660 IF I$<>"1" THEN 710
          670 U$=SEG(R$,26,1)
          680 P$=REP(U$,10,4)
          690 U$=SEG(R$,27,1)
          700 P$=REP(U$,29,1)
+++1+++   710 U$=SEG(R$,28,43)
          720 P$=REP(U$,37,43)
          730 IF L<M THEN 770
          740 IF A$<>"Y" THEN 760
          750 GOSUB 1140
+++1+++   760 GOSUB 820
+++1+++   770 PRINT @41:P$
          780 IF A$<>"Y" THEN 800
          790 PRINT @32:P$
+++1+++   800 L=L+1
          810 GO TO 450
-------------------------------------------------------------------------------
---2---   820 REM *** HEADING SUB-ROUTINE ***

          830 Y$=SEG(R$,16,2)
          840 M$=SEG(R$,14,2)
          850 D$=SEG(R$,12,2)
          860 IF D$=J$ THEN 890
          870 P=0
          880 D$=J$
+++1+++   890 P=P+1
          900 A=41
          910 PRINT @A:"L"
          920 GOSUB 980
          930 IF A$<>"Y" THEN 1090
          940 PAGE
          950 A=32
          960 GOSUB 980
          970 GO TO 1090
-------------------------------------------------------------------------------
---2---   980 PRINT @A: USING "16X,28A":"BLDG 1611 RECEIPT INSPECTION"
          990 PRINT @A:
         1000 PRINT @A: USING "52A,5A,2D":"DAY MO YR","PAGE",P
         1010 PRINT @A: USING "1X,3A,3A,36A,14A,2A":D$,M$,Y$,"COMPUTER PAGE",J$
         1020 PRINT @A,"J"
         1030 PRINT @A: USING "2X,31A":"SERIAL      --------ACTION------"
         1040 PRINT @A: USING 1050:"NUMBER","DESTROYED   RETURNED   COMMENTS"
         1050 IMAGE 2X,11A,31A
         1060 PRINT @A:
         1070 L=9
         1080 RETURN
+++2+++  1090 RETURN

         1100 REM *** SET EOF INDICATOR ***
-------------------------------------------------------------------------------
---3---   1110 E=1
```

```
         1120 REM *** PRINT HARD COPY ***

         1130 IF A$<>"Y" THEN 1250

-------------------------------------------------------------------------------
---1---  1140 PRINT @32,26;3
         1150 MOVE 0,0
         1160 PRINT
         1170 PRINT @32,26;0
         1180 IF E=1 THEN 1250
         1190 RETURN

+++1+++  1200 REM *** ERROR - WRONG RECORD TYPE ***

         1210 PRINT "RECORD TYPE! "I$
         1220 PRINT "DATA IS NOT ""BLDG 1611 RECEIPT INSPECTION"" DATA"
         1230 PRINT "*** ABNORMAL PROGRAM END ***"
         1240 GO TO 1260
+++2+++  1250 PRINT "***  NORMAL END OF PROGRAM  ***"
+++1+++  1260 END
```

FILE # 5

```
100 REM **** PRINT PROGRAM FOR DATA SHEET #11
110 REM **** PROCESS DATA FROM DISASSEMBLY ROOM
120 REM **** VERSION 7 - 3/12/81

130 INIT
140 PAGE
150 DIM B$(2),D$(2),M$(2),Y$(2),R$(70),P$(60),J$(2),K$(30)
160 PRINT "          PROGRAM TO PRINT"
170 PRINT "PROCESS DATA SHEET - DISASSEMBLY ROOM"

180 REM "JREMOVE PROGRAMMED TAPE FROM UNIT"

190 PRINT "INSERT DATA TAPE IN UNIT 4924"
200 PRINT "JDO YOU WAN" TO USE THE HARD COPIER?"
210 PRINT "ENTER (Y OR N) ";
220 INPUT A$
230 M=54
240 DIM A$(1)
250 IF A$<>"Y" THEN 280
260 M=34
270 PRINT "JMAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE"
280 PRINT "JENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
290 INPUT U
300 FIND @U:2
310 PAGE
320 P=0
330 E=0
340 K$=""
350 R$=" "
360 ON EOF (0) THEN 990
370 IF U=33 THEN 400
380 INPUT @U,6:T1
390 IF T1=1 THEN 990
400 INPUT @U,13:R$
410 IF U=33 THEN 440
420 INPUT @U,6:T1
430 IF T1=1 THEN 990
440 INPUT @U,13:R$
450 J$=SEG(R$,8,2)
460 T$=SEG(R$,4,2)
470 IF T$<>"11" THEN 1090
480 IF R$<>" " THEN 510
490 R$=J$
500 GO TO 530
510 IF J$=R$ THEN 540
520 GOSUB 1010
530 GOSUB 470
540 P$=P$&R$
550 U$=SEG(R$,22,2)
560 F$=REP(U$,4,2)
570 U$=SEG(R$,24,47)
580 R$=REP(U$,11,47)
590 IF L<M THEN 620
600 GOSUB 1010
610 GOSUB 470
620 L=L+1:PRINT #41:R$
630 IF A$<>"Y" THEN 650
```

```
          640 PRINT @32;P$
+++1+++   650 L=L+1
          660 GO TO 410
-------------------------------------------------------------------------------
---2---   670 REM *** HEADING SUB-ROUTINE ***

          690 Y$=SEG(R$,16,2)
          690 M$=SEG(R$,14,2)
          700 D$=SEG(R$,12,2)
          710 G$=SEG(R$,18,1)
          720 H$=SEG(R$,19,3)
          730 IF B$=J$ THEN 760
          740 P=0
          750 B$=J$
+++1+++   760 P=P+1
          770 A=41
          780 PRINT @A;"L"
          790 GOSUB 850
          800 IF A$<>"Y" THEN 980
          810 PAGE
          820 A=32
          830 GOSUB 650
          840 GO TO 980
-------------------------------------------------------------------------------
---2---   850 PRINT @A; USING "10X,40A,5A,2D";"PROCESS DATA SHEET","PAGE",P
          860 PRINT @A; USING 870;"DISASSEMBLY ROOM","COMPUTER PAGE",J$
          870 IMAGE 11X,30A,14A,2A
          880 PRINT @A;
          890 PRINT @A; USING "3X,19A,11A";"DAY MO YR","TYPE OF SET"
          900 PRINT @A; USING 910;D$,M$,Y$,G$,"-",H$
          910 IMAGE 4X,2A,3A,2A,5A,1A,1A,3A
          920 PRINT @A;
          930 PRINT @A;"STATION"
          940 PRINT @A;" NUMBER   EVENT/ACTION TAKEN"
          950 PRINT @A;
          960 L=9
          970 RETURN
+++2+++   980 RETURN
-------------------------------------------------------------------------------
---3---   990 REM *** SET EOF INDICATOR ***

          1000 E=1
-------------------------------------------------------------------------------
---2---   1010 REM *** PRINT HARD COPY ***

          1020 IF A$<>"Y" THEN 1070
          1030 PRINT @32,"C";3
          1040 PAGE 0,0
          1050 PRINT
          1060 PRINT @32,"C";0
+++1+++   1070 IF E=1 THEN 1140
          1080 RETURN
```

```
++++++++  1090 REM *** ERROR - WRONG TYPE RECORD ***

          1100 PRINT "RECORD TYPE: ";T$
          1110 PRINT "DATA IS NOT ""PROCESS DATA SHEET-DISASSEMBLY ROOM"" DATA"
          1120 PRINT "*** ABNORMAL END OF PROGRAM ***"
          1130 GO TO 1150
++++++++  1140 PRINT "J*** NORMAL END OF PROGRAM ***"
++++++++  1150 END
```

FILE # 4

```
100 REM **** PRINT PROGRAM FOR DATA SHEET #12
110 REM **** PROCESS DATA FROM RESIDUE AREA (PIGS)
120 REM **** VERSION 7 - 3/12/81

130 INIT
140 PAGE
150 DIM B$(2),D$(2),M$(2),Y$(2),P$(25),R$(31),J$(2),T$(2),K$(25)
160 PRINT "                PROGRAM TO PRINT"
170 PRINT "PROCESS DATA SHEET - DECONNED PIG CONTROL"

180 REM "REMOVE PROGRAMMED TAPE FROM UNIT"

190 PRINT "INSERT DATA TAPE IN UNIT 4924"
200 PRINT "DO YOU WANT TO USE THE HARD COPIER?"
210 PRINT "ENTER (Y OR N) "
220 INPUT A$
230 M=54
240 DIM A$(1)
250 IF A$<>"Y" THEN 280
260 M=34
270 PRINT "MAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE"
280 PRINT "ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "
290 INPUT U
300 FIND @U:3
310 P=0
320 E=0
330 K$="
340 B$=" "
350 ON EOF (0) THEN 1100
360 IF U=33 THEN 390
370 INPUT @U,6:T1
380 IF T1=1 THEN 1100
390 INPUT @U,13:R$
400 IF U=33 THEN 430
410 INPUT @U,6:T1
420 IF T1=1 THEN 1100
430 INPUT @U,13:R$
440 J$=SEG(R$,8,2)
450 T$=SEG(R$,4,2)
460 IF T$<>"12" THEN 1320
470 IF B$<>" " THEN 500
480 B$=J$
490 GO TO 520
500 IF J$=B$ THEN 530
510 GOSUB 1120
520 GOSUB 790

530 REM *** FORMAT DETAIL LINE AND PRINT ***

540 F$=R$
550 U$=SEG(R$,10,1)
560 F$=SEG(U$,5,1)
570 U$=SEG(R$,19,3)
580 F$=F$&(U$,7,3)
590 U$=SEG(R$,22,4)
600 F$=SEG(U$,11,4)
610 U$=SEG(R$,26,4)
```

```
          620 FOR I=1 TO 3
          630  V$=SEG(U$,I,1)
          640  IF V$<>"0" THEN 680
          650  V$=" "
          660  U$=REP(V$,I,1)
          670 NEXT I
+++1+++   680 P$=REP(U$,22,4)
          690 X$=SEG(R$,30,2)
          700 IF L<M THEN 740
          710 IF A$<>"Y" THEN 730
          720 GOSUB 1260
+++1+++   730 GOSUB 790
+++1+++   740 PRINT @41:P$
          750 IF A$<>"Y" THEN 770
          760 PRINT @32:P$
+++1+++   770 L=L+1
          780 GO TO 400

-------------------------------------------------------------------------------

---3---   790 REM *** HEADING SUB-ROUTINE ***

          800 Y$=SEG(R$,16,2)
          810 M$=SEG(R$,14,2)
          820 D$=SEG(R$,12,2)
          830 IF D$=J$ THEN 860
          840 P=0
          850 J$=J$
+++1+++   860 P=P+1
          870 A=41
          880 PRINT @A:"L"
          890 GOSUB 950
          900 IF A$<>"Y" THEN 1090
          910 PAGE
          920 A=32
          930 GOSUB 950
          940 GO TO 1090

-------------------------------------------------------------------------------

---2---   950 PRINT @A: USING 960:"PROCESS DATA SHEET","PAGE",P
          960 IMAGE 3X,18A,18X,5A,2D
          970 PRINT @A: USING 980:"RESIDUE AREA","COMPUTER PAGE",J$
          980 IMAGE 6X,12A,12X,14A,2A
          990 PRINT @A:
         1000 PRINT @A: USING "7X,9A":"DAY MO YR"
         1010 PRINT @A: USING "8X,3(3A)":D$,M$,Y$
         1020 PRINT @A:
         1030 PRINT @A:"  DECONNED PIG CONTROL"
         1040 PRINT @A:
         1050 PRINT @A:"PIG CONTROL NUMBER   SKID"
         1060 PRINT @A:
         1070 L=10
         1080 RETURN
+++2+++  1090 RETURN

-------------------------------------------------------------------------------

---3---  1100 REM *** SET EOF INDICATOR ***

         1110 E=1
```

```
---1---  1120 REM *** PRINT LAST LINE OF DATA SHEET ***
         1130 IF L<M THEN 1150
         1140 GOSUB 790
+++1+++  1150 V$=SEG(X$,1,1)
         1160 IF V$<>"0" THEN 1190
         1170 V$=" "
         1180 X$=REP(V$,1,1)
+++1+++  1190 Z$="TOTAL PIGS DECONNED: "
         1200 PRINT @41;
         1210 PRINT @41;Z$;X$

         1220 REM *** PRINT HARD COPY ***

         1230 IF A$<>"Y" THEN 1300
         1240 PRINT
         1250 PRINT Z$;X$

---1---  1260 PRINT @32,26;3
         1270 MOVE 0,0
         1280 PRINT
         1290 PRINT @32,26;0
+++1+++  1300 IF E=1 THEN 1390
         1310 RETURN

+++1+++  1320 REM *** ERROR - WRONG RECORD TYPE ***

         1330 PAGE
         1340 PRINT "RECORD TYPE: ";T$
         1350 PRINT "DATA IS NOT **PROCESS DATA SHEET-DECONNED PIG CONTROL***"
         1360 PRINT "*** ABNORMAL PROGRAM END ***"
         1370 GO TO 1400
         1380 PAGE
+++1+++  1390 PRINT "*** NORMAL END OF PROGRAM ***"
+++1+++  1400 END
```

FILE # 7

```
100 REM **** PRINT PROGRAM FOR DATA SHEET #13
110 REM **** PROCESS DATA FROM RESIDUE AREA (DRUMS)
120 REM **** VERSION 7 - 2/12/81

130 INIT
140 PAGE
150 DIM B$(2),D$(2),J$(2),K$(36),M$(2),P$(36),R$(27),T$(2),X$(2)
160 PRINT "                PROGRAM TO PRINT"
170 PRINT "PROCESS DATA SHEET - FURNACE RESIDUE CONTROL"

180 REM "JREMOVE PROGRAMMED TAPE FROM UNIT"

190 PRINT "INSERT DATA TAPE IN UNIT 4924"
200 PRINT "JDO YOU WANT TO USE THE HARD COPIER? "
210 PRINT "ENTER (Y OR N) "!
220 INPUT A$
230 DIM A$(1)
240 IF A$<>"Y" THEN 260
250 PRINT "JMAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE"
+++1+++ 260 PRINT "JENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE. "!
270 INPUT U
280 FIND @U:4
290 PAGE
300 E=0
310 B$=" "
320 K$="
330 E$="   PROCESS DATA SHEET        PAGE "
340 F$="      RESIDUE AREA"
350 G$="        DAY MO YR"
360 H$="FURNACE RESIDUE CONTROL"
370 I$="                  DRUM"
380 L$="               WEIGHT"
390 N$="DRUM NUMBER    (POUNDS)"
400 O$="     TOTAL DRUMS FURNACE RESIDUE! "
410 ON EOF (0) THEN 1050
420 IF U=33 THEN 450
430 INPUT @U,6:T1
440 IF T1=1 THEN 1050
+++1+++ 450 INPUT @U,13:R$
+++2+++ 460 IF U=33 THEN 490
470 INPUT @U,6:T1
480 IF T1=1 THEN 1050
+++1+++ 490 INPUT @U,13:R$
500 J$=SEG(R$,8,2)
510 T$=SEG(R$,4,2)
520 IF T$<>"13" THEN 1220
530 IF B$<>" " THEN 560
540 B$=J$
550 GO TO 560
+++1+++ 560 IF J$=B$ THEN 590
570 GOSUB 1060
+++1+++ 580 GOSUB 770
+++1+++ 590 P$=K$
600 U$=SEG(R$,18,1)
610 P$=REP(U$,4,1)
620 U$=SEG(R$,19,4)
630 P$=REP(U$,6,4)
```

```
          640 U$=SEG(R$,23,3)
          650 FOR I=1 TO 2
          660  V$=SEG(U$,I,1)
          670  IF V$<>"0" THEN 710
          680  V$=" "
          690  U$=REP(V$,I,1)
          700 NEXT I
+++1+++   710 P$=REP(U$,18,3)
          720 X$=SEG(R$,26,2)
          730 PRINT @41;P$
          740 IF A$<>"Y" THEN 460
          750 PRINT @321;P$
          760 GO TO 460
```

```
---1---   770 REM *** HEADING SUB-ROUTINE ***

          780 Y$=SEG(R$,16,2)
          790 M$=SEG(R$,14,2)
          800 D$=SEG(R$,12,2)
          810 B$=J$
          820 A=41
          830 PRINT @A;"L"
          840 GOSUB 900
          850 IF A$<>"Y" THEN 1030
          860 PAGE
          870 A=32
          880 GOSUB 900
          890 GO TO 1030
```

```
---2---   900 PRINT @A;E$;J$
          910 PRINT @A;F$
          920 PRINT @A;
          930 PRINT @A;G$
          940 PRINT @A; USING "8X,3(3A)";D$,M$,Y$
          950 PRINT @A;
          960 PRINT @A;H$
          970 PRINT @A;
          980 PRINT @A;I$
          990 PRINT @A;L$
         1000 PRINT @A;N$
         1010 PRINT @A;
         1020 RETURN
+++2+++  1030 RETURN

         1040 REM *** SET EOF INDICATOR ***
```

```
---3---   1050 E=1
```

```
---1---   1060 REM *** PRINT LAST LINE OF DATA SHEET ***

         1070 V$=SEG(X$,1,1)
         1080 IF V$<>"0" THEN 1110
         1090 V$=" "
```

```
          1100 X$=REP(V$,1,1)
+++1+++   1110 PRINT @41;
          1120 PRINT @41;O$;X$
          1130 IF A$<>"Y" THEN 1200
          1140 PRINT
          1150 PRINT O$;X$
          1160 PRINT @32,24;3
          1170 MOVE 0,0
          1180 PRINT
          1190 PRINT @32,24;0
+++1+++   1200 IF E=1 THEN 1270
          1210 RETURN

+++1+++   1220 REM *** ERROR - WRONG RECORD TYPE ***

          1230 PRINT "RECORD TYPE: ";T$
          1240 PRINT "DATA IS NOT **FURNACE RESIDUE CONTROL** DATA"
          1250 PRINT "*** ABNORMAL PROGRAM END ***"
          1260 GO TO 1290
+++1+++   1270 PAGE
          1280 PRINT "*** NORMAL END OF PROGRAM ***"
+++1+++   1290 END
```

FILE # 8

```
100 REM **** PRINT PROGRAM FOR DATA SHEET #14
110 REM **** PROCESS DATA - SPRAY DRYER
120 REM **** VERSION 7 - 3/12/81

130 INIT
140 PAGE
150 DIM B$(2),D$(2),J$(2),K$(36),M$(2),P$(36),R$(27),T$(2),X$(2)
160 PRINT '                PROGRAM TO PRINT'
170 PRINT 'PROCESS DATA SHEET - SPRAY DRYER'

180 REM 'JREMOVE PROGRAMMED TAPE FROM UNIT'

190 PRINT 'INSERT DATA TAPE IN UNIT 4924'
200 PRINT 'JDO YOU WANT TO USE THE HARD COPIER? '
210 PRINT 'ENTER (Y OR N) '!
220 INPUT A$
230 DIM A$(1)
240 IF A$<>'Y' THEN 260
250 PRINT 'JMAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE'
+++1+++  260 PRINT 'JENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  '!
270 INPUT U
280 FIND @U15
290 PAGE
300 E=0
310 B$=' '
320 K$='
330 E$='    PROCESS DATA SHEET        PAGE '
340 F$='       SPRAY DRYER'
350 G$='         DAY MO YR'
360 H$='SPRAY DRIED SALT CONTROL'
370 I$='                  DRUM'
380 L$='                WEIGHT'
390 N$='DRUM NUMBER    (POUNDS)'
400 O$='      TOTAL DRUMS SALT! '
410 ON EOF (0) THEN 1050
420 IF U=33 THEN 450
430 INPUT @U,6:T1
440 IF T1=1 THEN 1050
+++1+++  450 INPUT @U,13:R$
+++2+++  460 IF U=33 THEN 490
470 INPUT @U,6:T1
480 IF T1=1 THEN 1050
+++1+++  490 INPUT @U,13:R$
500 J$=SEG(R$,8,2)
510 T$=SEG(R$,4,2)
520 IF T$<>'14' THEN 1220
530 IF D$<>' ' THEN 560
540 D$=J$
550 GO TO 580
+++1+++  560 IF J$=D$ THEN 590
570 GOSUB 1060
+++1+++  580 GOSUB 770
+++1+++  590 P$=R$
600 U$=SEG(R$,18,1)
610 P$=REP(U$,4,1)
620 U$=SEG(R$,19,4)
630 P$=REP(U$,6,4)
```

```
          640 U$=SEG(R$,23,3)
          650 FOR I=1 TO 2
          660  V$=SEG(U$,I,1)
          670  IF V$<>"0" THEN 710
          680  V$=" "
          690  U$=REP(V$,I,1)
          700 NEXT I
+++1+++   710 P$=REP(U$,10,3)
          720 X$=SEG(R$,26,2)
          730 PRINT @41;P$
          740 IF A$<>"Y" THEN 460
          750 PRINT @32;P$
          760 GO TO 460
-------------------------------------------------------------------------------
---1---   770 REM *** HEADING SUB-ROUTINE ***

          780 Y$=SEG(R$,16,2)
          790 M$=SEG(R$,14,2)
          800 D$=SEG(R$,12,2)
          810 B$=J$
          820 A=41
          830 PRINT @A;"L"
          840 GOSUB 900
          850 IF A$<>"Y" THEN 1030
          860 PAGE
          870 A=32
          880 GOSUB 900
          890 GO TO 1030
-------------------------------------------------------------------------------
---2---   900 PRINT @A;E$;J$
          910 PRINT @A;F$
          920 PRINT @A;
          930 PRINT @A;G$
          940 PRINT @A; USING "8X,3(3A)";D$,M$,Y$
          950 PRINT @A;
          960 PRINT @A;H$
          970 PRINT @A;
          980 PRINT @A;I$
          990 PRINT @A;L$
          1000 PRINT @A;N$
          1010 PRINT @A;
          1020 RETURN
+++2+++   1030 RETURN

          1040 REM *** SET EOF INDICATOR ***
-------------------------------------------------------------------------------
---3---   1050 E=1
-------------------------------------------------------------------------------
---1---   1060 REM *** PRINT LAST LINE OF DATA SHEET ***

          1070 V$=SEG(X$,1,1)
          1080 IF V$<>"0" THEN 1110
          1090 V$=" "
```

```
          1100 X$=REP(V$,1,1)
+++1+++   1110 PRINT @41:
          1120 PRINT @41|O$|X$
          1130 IF A$<>"Y" THEN 1200
          1140 PRINT
          1150 PRINT O$|X$
          1160 PRINT @32,2613
          1170 MOVE 0,0
          1180 PRINT
          1190 PRINT @32,2610
+++1+++   1200 IF E=1 THEN 1270
          1210 RETURN

+++1+++   1220 REM *** ERROR - WRONG RECORD TYPE ***

          1230 PRINT "RECORD TYPE: "IT$
          1240 PRINT "DATA IS NOT ""SPRAY DRYER"" DATA"
          1250 PRINT "*** ABNORMAL PROGRAM END ***"
          1260 GO TO 1290
+++1+++   1270 PAGE
          1280 PRINT "*** NORMAL END OF PROGRAM ***"
+++1+++   1290 END
```

FILE # 9

```
100 REM **** PRINT PROGRAM FOR DATA SHEET #15
110 REM **** PROCESS DATA - ELECTROSTATIC PRECIPITATOR
120 REM **** VERSION 7 -3/12/81

130 INIT
140 PAGE
150 DIM B$(2),D$(2),J$(2),K$(36),M$(2),P$(36),R$(27),T$(2),X$(2)
160 PRINT '                PROGRAM TO PRINT'
170 PRINT 'PROCESS DATA SHEET - ELECTROSTATIC PRECIPITATOR'

180 REM 'REMOVE PROGRAMMED TAPE FROM UNIT'

190 PRINT 'INSERT DATA TAPE IN UNIT 4924'
200 PRINT 'DO YOU WANT TO USE THE HARD COPIER? '
210 PRINT 'ENTER (Y OR N) ';
220 INPUT A$
230 DIM A$(1)
240 IF A$<>'Y' THEN 260
250 PRINT 'MAKE SURE UNIT IS ON AND IS AT OPERATING TEMPERATURE'
260 PRINT 'ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ';
270 INPUT U
280 FIND @U:6
290 PAGE
300 E=0
310 B$=' '
320 K$='
330 E$='    PROCESS DATA SHEET       PAGE '
340 F$='ELECTROSTATIC PRECIPITATOR'
350 G$='        DAY MO YR'
360 H$='   EP WASTE CONTROL'
370 I$='                  DRUM'
380 L$='                WEIGHT'
390 N$='DRUM NUMBER   (POUNDS)'
400 O$='     TOTAL DRUMS WASTE: '
410 ON EOF (0) THEN 1050
420 IF U=33 THEN 450
430 INPUT @U,6:T1
440 IF T1=1 THEN 1050
450 INPUT @U,13:R$
460 IF U=33 THEN 490
470 INPUT @U,6:T1
480 IF T1=1 THEN 1050
490 INPUT @U,13:R$
500 J$=SEG(R$,8,2)
510 T$=SEG(R$,4,2)
520 IF T$<>'15' THEN 1220
530 IF B$<>' ' THEN 560
540 B$=J$
550 GO TO 580
560 IF J$=B$ THEN 590
570 GOSUB 1060
580 GOSUB 770
590 P$=K$
600 U$=SEG(R$,18,1)
610 P$=REP(U$,4,1)
620 U$=SEG(R$,19,4)
630 P$=REP(U$,6,4)
```

```
          640 U$=SEG(R$,23,3)
          650 FOR I=1 TO 2
          660  V$=SEG(U$,I,1)
          670  IF V$<>"0" THEN 710
          680  V$=" "
          690  U$=REP(V$,I,1)
          700 NEXT I
+++1+++   710 P$=REP(U$,18,3)
          720 X$=SEG(R$,26,2)
          730 PRINT @41:P$
          740 IF A$<>"Y" THEN 460
          750 PRINT @32:P$
          760 GO TO 460

-------------------------------------------------------------------------------

---1---   770 REM *** HEADING SUB-ROUTINE ***

          780 Y$=SEG(R$,16,2)
          790 M$=SEG(R$,14,2)
          800 D$=SEG(R$,12,2)
          810 B$=J$
          820 A=41
          830 PRINT @A:"L"
          840 GOSUB 900
          850 IF A$<>"Y" THEN 1030
          860 PAGE
          870 A=32
          880 GOSUB 900
          890 GO TO 1030

-------------------------------------------------------------------------------

---2---   900 PRINT @A:E$;J$
          910 PRINT @A:F$
          920 PRINT @A:
          930 PRINT @A:G$
          940 PRINT @A: USING "8X,3(3A)":D$,M$,Y$
          950 PRINT @A:
          960 PRINT @A:H$
          970 PRINT @A:
          980 PRINT @A:I$
          990 PRINT @A:L$
         1000 PRINT @A:N$
         1010 PRINT @A:
         1020 RETURN
+++2+++  1030 RETURN

         1040 REM *** SET EOF INDICATOR ***

-------------------------------------------------------------------------------

---3---   1050 E=1

-------------------------------------------------------------------------------

---1---   1060 REM *** PRINT LAST LINE OF DATA SHEET ***

          1070 V$=SEG(X$,I,1)
          1080 IF V$<>"0" THEN 1110
          1090 V$=" "
```

```
         1100 X$=REP(V$,1,1)
*****    1110 PRINT @41;
         1120 PRINT @41;D$;X$
         1130 IF A$<>"Y" THEN 1200
         1140 PRINT
         1150 PRINT D$;X$
         1160 PRINT @32,26;3
         1170 MOVE 0,0
         1180 PRINT
         1190 PRINT @32,26;0
*****    1200 IF E=1 THEN 1270
         1210 RETURN

*****    1220 REM *** ERROR - WRONG RECORD TYPE ***

         1230 PRINT "RECORD TYPE: ";T$
         1240 PRINT "DATA IS NOT **ELECTROSTATIC PRECIPITATOR** DATA"
         1250 PRINT "*** ABNORMAL PROGRAM END ***"
         1260 GO TO 1290
*****    1270 PAGE
         1280 PRINT "*** NORMAL END OF PROGRAM ***"
*****    1290 END
```

FILE # 10

```
100 REM ****   PRINT PROGRAM FOR DATA SHEET #16   ****
110 REM        DOWNTIME DATA - KEYS AND/OR CORRESPONDING NAMES
120 REM ****   VERSION 8 - 5/20/81
130 REM
140 REM        BY:  STEARNS-ROGER, INC.
150 REM ****         M. R. HERBERT/M. E. MARTIN    ****

160 INIT
170 DIM P(26,2),P$(370),Q(59,2),Q$(840),R(40,2),R$(290),Q$(126)
180 DIM S(37,2),S$(320),T(16,2),T$(190),U(6,2),U$(90),L$(132),M$(101)
190 G$="------------------------------------------------------------"
200 G$=G$&G$
210 READ P
220 READ P$
230 FOR I=1 TO 6
240  READ Y$
250  P$=P$&Y$
260 NEXT I
270 DELETE Y$
280 READ Q
290 READ Q$
300 FOR I=1 TO 15
310  READ Y$
320  Q$=Q$&Y$
330 NEXT I
340 DELETE Y$
350 READ R
360 READ R$
370 FOR I=1 TO 5
380  READ Y$
390  R$=R$&Y$
400 NEXT I
410 DELETE Y$
420 READ S
430 READ S$
440 FOR I=1 TO 5
450  READ Y$
460  S$=S$&Y$
470 NEXT I
480 DELETE Y$
490 READ T
500 READ T$
510 FOR I=1 TO 3
520  READ Y$
530  T$=T$&Y$
540 NEXT I
550 DELETE Y$
560 READ U
570 READ U$
580 READ Y$
590 U$=U$&Y$
600 DELETE Y$
610 PAGE
620 PRINT "DO YOU WANT TO LIST?"
630 PRINT "   1 - DOWNTIME DATA"
640 PRINT "   2 - NAMES CORRESPONDING TO DOWNTIME KEYS"
650 PRINT "ENTER 1 OR 2:  ";
```

```
+++1+++  660 INPUT A
         670 IF A=2 THEN 1900
         680 IF A=1 THEN 710
         690 PRINT "INVALID RESPONSE - ENTER 1 OR 2 "
         700 GO TO 660

+++1+++  710 REM "JREMOVE PROGRAMMED TAPE FROM UNIT"

         720 PRINT "JINSERT DATA TAPE IN UNIT 4924"
         730 PRINT "ENTER UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "
         740 INPUT U1
         750 FIND @U1:1
         760 M$=""
         770 ON EOF (0) THEN 1850
         780 IF U1=33 THEN 810
         790 INPUT @U1,6:T1
         800 IF T1=1 THEN 1850
+++1+++  810 INPUT @U1,13:M$
         820 IF U1=33 THEN 850
         830 INPUT @U1,6:T1
         840 IF T1=1 THEN 1850
+++1+++  850 INPUT @U1,13:M$
         860 E$=SEG(M$,4,2)
         870 IF E$<>"16" THEN 1870
         880 PRINT @41:"L"
         890 PRINT @41: USING "52X,27A":"ID SETS PLANT DOWNTIME DATA"
         900 PRINT @41:
         910 PRINT @41: USING "61X,9A":"DAY MO YR"
         920 C$=SEG(M$,16,2)
         930 B$=SEG(M$,14,2)
         940 A$=SEG(M$,12,2)
         950 PRINT @41: USING "62X,3(3A)":A$,B$,C$
         960 PRINT @41:
         970 A$=SEG(M$,6,2)
         980 IF A$<>"40" THEN 1020
         990 PRINT @41:.
        1000 PRINT @41: USING "55X,30A":"NO PLANT DOWNTIME DATA"
        1010 GO TO 1050
+++1+++ 1020 PRINT @41: USING 1030:"   TIME","PRIMARY & SECONDARY","CORRECTIVE"
        1030 IMAGE 36A,59A,10A
        1040 PRINT @41: USING "41A,S":"START STOP SIM SUBSYSTEM"
        1050 PRINT @41: USING 1060:"COMPONENTS","DESCRIPTIVE","FAILURE"
        1060 IMAGE 16A,19A,21A,S
        1070 PRINT @41:"ACTION            EFFECT"
        1080 PRINT @41:"J",G$
        1090 GO TO 1150
+++2+++ 1100 PRINT @41:"J",G$
        1110 IF U1=33 THEN 1140
        1120 INPUT @U1,6:T1
        1130 IF T1=1 THEN 1850
+++1+++ 1140 INPUT @U1,13:M$
+++1+++ 1150 L$=K$[K$
        1160 L$=L$[K$
        1170 L$=L$[K$
        1180 A$=SEG(M$,18,4)
        1190 L$=REP(A$,1,4)
        1200 A$=SEG(M$,22,4)
        1210 L$=REP(A$,7,4)
        1220 A$=SEG(M$,26,1)
        1230 L$=REP(A$,13,1)
```

```
         1240 REM *** FORMAT SUBSYSTEM ***

         1250 A$=SEG(M$,27,2)
         1260 I=VAL(A$)
         1270 IF I=>1 AND I<=25 THEN 1300
         1280 IF I<>99 THEN 1330
         1290 I=26
+++1+++  1300 B$=SEG(P$,P(I,1),P(I,2))
         1310 L$=REP(B$,16,P(I,2))

         1320 REM *** FORMAT PRIMARY COMP ***

+++1+++  1330 A$=SEG(M$,29,2)
         1340 I=VAL(A$)
         1350 B$=SEG(U$,U(I,1),U(I,2))
         1360 L$=REP(B$,37,U(I,2))

         1370 REM *** FORMAT DESCRIPTIVE ***

         1380 A$=SEG(M$,33,2)
         1390 I=VAL(A$)
         1400 IF I=>1 AND I<=39 THEN 1430
         1410 IF I<>99 THEN 1460
         1420 I=40
+++1+++  1430 B$=SEG(R$,R(I,1),R(I,2))
         1440 L$=REP(B$,58,R(I,2))

         1450 REM *** FORMAT FAILURE ***

+++1+++  1460 A$=SEG(M$,35,2)
         1470 I=VAL(A$)
         1480 IF I=>1 AND I<=36 THEN 1510
         1490 IF I<>99 THEN 1540
         1500 I=37
+++1+++  1510 B$=SEG(S$,S(I,1),S(I,2))
         1520 L$=REP(B$,77,S(I,2))

         1530 REM *** FORMAT CORRECTIVE ACTION ***

+++1+++  1540 A$=SEG(M$,37,2)
         1550 I=VAL(A$)
         1560 IF I=>1 AND I<=14 THEN 1620
         1570 IF I<>98 THEN 1600
         1580 I=15
         1590 GO TO 1620
+++1+++  1600 IF I<>99 THEN 1650
         1610 I=16
+++2+++  1620 B$=SEG(T$,T(I,1),T(I,2))
         1630 L$=REP(B$,96,T(I,2))

         1640 REM *** FORMAT EFFECT ON OPERATION ***

+++1+++  1650 A$=SEG(M$,39,2)
         1660 I=VAL(A$)
         1670 IF I<1 OR I>6 THEN 1700
         1680 B$=SEG(U$,U(I,1),U(I,2))
         1690 L$=REP(B$,115,U(I,2))

+++1+++  1700 REM *** PRINT DETAIL LINE ***
```

```
            1710 PRINT @41:L$

            1720 REM *** PRINT SECONDARY COMP ***

            1730 A$=SEG(M$,31,2)
            1740 IF A$="00" THEN 1790
            1750 I=VAL(A$)
            1760 B$=SEG(Q$,Q(I,1),Q(I,2))
            1770 PRINT @41: USING "36X,20A":B$

            1780 REM *** PRINT COMMENT ***

      +++1+++  1790 B$=SEG(M$,45,57)
            1000 C$=SEG(B$,1,5)
            1810 IF C$="     " THEN 1100
            1820 PRINT @41:
            1830 PRINT @41: USING "17A,57A":"        COMMENT: ",B$
            1840 GO TO 1100

-----------------------------------------------------------------------------------------
      ---5---  1850 PRINT "*** NORMAL END OF PROGRAM ***"
            1860 GO TO 2500
      +++1+++  1870 PRINT "*** NOT DOWNTIME DATA SHEET 16 ***"
            1880 PRINT "*** ABNORMAL PROGRAM END ***"
            1890 GO TO 2500
      +++1+++  1900 PRINT @41:"LSUBSYSTEMSJJ"
            1910 FOR I=1 TO 25
            1920  X$=SEG(P$,P(I,1),P(I,2))
            1930  PRINT @41:I,X$
            1940  DELETE X$
            1950 NEXT I
            1960 PRINT @41:
            1970 X$=SEG(P$,P(26,1),P(26,2))
            1980 I=99
            1990 PRINT @41:I,X$
            2000 DELETE X$
            2010 PRINT @41:"LCOMPONENTSJJ"
            2020 FOR I=1 TO 99
            2030  X$=SEG(Q$,Q(I,1),Q(I,2))
            2040  PRINT @41:I,X$
            2050  DELETE X$
            2060 NEXT I
            2070 PRINT @41:"LDESCRIPTIVE ACTIONJJ"
            2080 FOR I=1 TO 39
            2090  X$=SEG(R$,R(I,1),R(I,2))
            2100  PRINT @41:I,X$
            2110  DELETE X$
            2120 NEXT I
            2130 PRINT @41:
            2140 X$=SEG(R$,R(40,1),R(40,2))
            2150 I=99
            2160 PRINT @41:I,X$
            2170 DELETE X$
            2180 PRINT @41:"LFAILURE MODESJJ"
            2190 FOR I=1 TO 36
            2200  X$=SEG(S$,S(I,1),S(I,2))
            2210  PRINT @41:I,X$
            2220  DELETE X$
            2230 NEXT I
```

```
2240 PRINT @41;
2250 X$=SEG(S$,S(37,1),S(37,2))
2260 I=99
2270 PRINT @41:I,X$
2280 DELETE X$
2290 PRINT @41;"LCORRECTIVE ACTIONJJ"
2300 FOR I=1 TO 14
2310  X$=SEG(T$,T(I,1),T(I,2))
2320  PRINT @41:I,X$
2330  DELETE X$
2340 NEXT I
2350 PRINT @41;
2360 FOR I=15 TO 16
2370  X$=SEG(T$,T(I,1),T(I,2))
2380  K=I+83
2390  PRINT @41:K,X$
2400  DELETE X$
2410 NEXT I
2420 PRINT @41;"LEFFECT ON OPERATIONJJ"
2430 FOR I=1 TO 6
2440  X$=SEG(U$,U(I,1),U(I,2))
2450  PRINT @41:I,X$
2460  DELETE X$
2470 NEXT I

2480 REM

2490 CLOSE
+++2+++  2500 END

2510 REM
2520 REM ************* P ARRAY (26,2) ************************************

2530 DATA 1,18,20,11,32,13,45,20,66,8,75,13,89,5,94,15,110,4,115,20
2540 DATA 142,9,151,12,164,13,178,13,192,12,204,15,220,6,227,11
2550 DATA 239,20,261,9,271,12,284,8,293,16,309,17,327,17,352,14

2560 REM
2570 REM ************* P$ ARRAY (370) - SUBSYSTEM ************************

2580 DATA "POWER DISTRIBUTION-SERVICE AIR-POTABLE WATER"
2590 DATA "STEAM AND CONDENSATE-FUEL OIL-PROCESS WASTE-DOORS"
2600 DATA "FIRE PROTECTION-HVAC-ELECTROSTATIC PRECIP-------SCRUBBERS"
2610 DATA "CONTROL ROOM-DEACT FURNACE-DECON FURNACE-AFTER BURNER"
2620 DATA "EMERGENCY POWER-QUENCH-SPRAY DRYER-RECEIVING & HANDLING--"
2630 DATA "GLOVE BOX-DECON MODULE-BOX FEED-RESIDUE HANDLING"
2640 DATA "SET MOVEMENT(TSY)-ENVIRO MONITORING-+-------ADMINISTRATIVE"

2650 REM
2660 REM ************* Q ARRAY (99,2) ************************************

2670 DATA 1,15,17,5,23,4,28,5,34,4,39,4,44,5,50,5,55,8,64,7,72,8
2680 DATA 81,14,96,5,102,7,109,4,114,15,130,6,137,6,144,6,151,10
2690 DATA 161,12,174,6,181,10,192,19,211,19,231,19,251,5,257,4
2700 DATA 261,11,273,10,284,8,293,4,298,6,305,8,313,11,325,12,330,4
2710 DATA 343,5,349,4,354,6,361,4,365,4,370,5,376,5,382,10,393,14
2720 DATA 409,6,415,6,421,5,427,6,434,4,439,4,444,6,451,4,456,4
2730 DATA 461,6,468,6,474,8,483,20,507,7,515,6,522,3
2740 DATA 525,8,534,6,541,9,551,6,558,10,569,5,574,20,596,13
2750 DATA 610,10,621,8,629,15,645,1,647,5,653,8,662,14,677,5
```

```
2760 DATA 682,7,690,7,698,20,719,8,728,3,731,5,737,5,743,7,751,8,760,6
2770 DATA 767,4,772,6,779,5,784,4,789,5,795,3,799,7,807,9,817,6
2780 DATA 824,4,829,5

2790 REM
2800 REM ************ O$ ARRAY (840) - COMPONENTS ************************

2810 DATA "ACTUATOR,FEELER-MOTOR-PUMP-VALVE-BELT-SEAL-SHAFT-CHAIN"
2820 DATA "SPROCKET-BEARING-CYLINDER-VALVE,SOLENOID-RELAY-CONTACT"
2830 DATA "FUSE-CIRCUIT BREAKER-WIRING-SWITCH-CAMERA-CONTROLLER"
2840 DATA "PAN AND TILT-DAMPER-POSITIONER-AIR HANDLING UNIT 1"
2850 DATA "AIR HANDLING UNIT 2-AIR HANDLING UNIT 3-TIMER-HOSE"
2860 DATA "TRANSMITTER-SPRAY TREE-CONVEYOR-GEAR-WINDOW-HOT SHOE"
2870 DATA "INSIDE CART-OUTSIDE CART-DOOR-GAUGE-TANK-HOPPER-TRAY"
2880 DATA "RACK-HOIST-CABLE-BLOCK/HOOK-LIFTING DEVICE-PALLET-BURNER"
2890 DATA "PILOT-FIREYE-SUMP-PIPE-BOILER-COIL-TRAP-HEATER-FILTER"
2900 DATA "STRAINER-THERMOSTAT/THERMOCOU----LINKAGE-BLOWER-FAN"
2910 DATA "OVERPACK-GLOVES-SPHINCTER-WRENCH-COMPRESSOR-DRYER"
2920 DATA "HEAT EXCHANGE/COOLER--CONTROL PANEL-TV MONITOR-CART TOP"
2930 DATA "CIRCUIT BREAKER- -LIGHT-MIRAN 80-BUBBLER/FILTER-TABLE"
2940 DATA "PIG SET-BOX SET-CONNECTOR/ATTACHMENT-LINK/TAB-PIN"
2950 DATA "ALARM-STAGE-STATION-VIBRATOR-RAPPER-GRID-SAMPLE-WHEEL"
2960 DATA "BAND-STACK-SKI-BATTERY-REGULATOR-BRIDGE-IRIS-OTHER"

2970 REM
2980 REM ************ R ARRAY (40,2) ************************************

2990 DATA 1,5,7,5,13,4,18,4,23,3,27,3,31,3,35,3,39,3,43,5,49,5
3000 DATA 54,9,64,9,74,11,86,8,95,5,101,4,105,8,114,5,120,5,126,5
3010 DATA 132,10,143,11,154,8,163,9,173,3,177,5,183,6,190,7,198,7
3020 DATA 205,6,212,9,222,8,231,6,238,8,247,5,252,7,260,7,268,8,277,5

3030 REM
3040 REM ************ R$ ARRAY (290) - DESCRIPTIVE **********************

3050 DATA "NORTH-SOUTH-EAST-WEST-N01-N02-N03-N04-N05-UPPER-LOWER"
3060 DATA "HYDRAULIC-PNEUMATIC-TEMPERATURE-PRESSURE-LEVEL-FLOW"
3070 DATA "POSITION-FLAME-BRINE-STEAM-CONDENSATE-NATURAL GAS"
3080 DATA "FUEL OIL-LUBRICANT-AIR-WATER-BYPASS-CONTROL-SHUTOFF"
3090 DATA "SUPPLY-ISOLATION-SOLENOID-RELIEF-TRANSFER-AGENT"
3100 DATA "PIG SET-BOX SET-OVERSIZE-OTHER"

3110 REM
3120 REM ************ S ARRAY (37,2) ************************************

3130 DATA 1,7,9,9,19,7,27,6,34,4,39,4,44,8,53,4,57,6,64,17,82,8
3140 DATA 91,3,95,2,98,5,104,11,115,6,122,5,128,17,152,5,158,12
3150 DATA 170,11,182,13,196,6,203,10,214,9,223,6,230,11,242,11
3160 DATA 254,10,265,4,270,3,273,6,280,7,288,4,293,6,300,5,306,5

3170 REM
3180 REM ************ S$ ARRAY (320) - FAILURE MODES ********************

3190 DATA "MISSING-NOT READY-WAITING-BURNED-LEAK-MADE-NOT MADE-BENT"
3200 DATA "BROKEN-OUT OF ADJUSTMENT-FLAMEOUT-OFF-ON-LOOSE-AIR IN LINE"
3210 DATA "JAMMED-STUCK-FALSE SIGNAL/READ--------EMPTY-OUT OF STOCK"
3220 DATA "HUMAN ERROR-CAUSE UNKNOWN-FOGGED-INSPECTION-OFF TRACK"
3230 DATA "REBURN-DROPPED PIG-CHANGE TEST-INCOMPLETE-HIGH-LOW"
3240 DATA "WARPED-PLUGGED-FULL-FROZEN-DIRTY-OTHER"
```

```
3250 REM
3260 REM ************ T ARRAY (16,2) ************************************

3270 DATA 1,11,13,6,20,9,30,15,46,5,51,18,73,7,81,14
3280 DATA 95,7,103,18,127,18,146,15,162,7,170,8,179,4,184,5

3290 REM
3300 REM ************ T$ ARRAY (190) - CORRECTIVE ACTION ****************

3310 DATA "INVESTIGATE-ADJUST-LUBRICATE-REPAIR IN PLACE-RESET"
3320 DATA "REMOVE/REPAIR/REPL----INSTALL-REMOVE/REPLACE"
3330 DATA "RESTART-START BACKUP/STDBY------PROBLEM DISAPEARED-"
3340 DATA "ACTION DEFERRED-CLEANED-UNJAMMED-NONE-OTHER"

3350 REM
3360 REM ************ U ARRAY (6,2) ************************************

3370 DATA 1,12,14,17,34,6,41,13,54,12,67,15

3380 REM
3390 REM ************ U$ ARRAY (90) - EFFECT ON OPERATION **************

3400 DATA "DISCONTINUED-INTERRUPT/RESUMED---SLOWED-DELAYED START"
3410 DATA "NOT AFFECTED-CAUSED OVERTIME"

3420 REM
3430 REM ****************** END OF PROGRAM ***********************************
```

FILE # 1

```
         1 GO TO 100
         4 GO TO 310
         8 GO TO 310

+++1+++  100 REM ****      DIRECTORY FOR MERGE PROGRAMS
         110 REM ****          VERSION 3 - 07/31/81

         120 INIT
         130 PAGE
         140 SET KEY
         150 PRINT *        DIRECTORY FOR PROGRAMS TO MERGE DATA*
         160 PRINT *        FOR TRANSMISSION TO THE UNIVAC 1108*
         180 PRINT *JJ        KEY   PROGRAM*
         190 PRINT *          ---   --------*
         200 PRINT *           1    MIRAN 80 DATA (DATA SHEET 9)*
         210 PRINT *J          2     INVENTORY DATA  (DATA SHEETS 10-15)*

         230 REM

         240 PRINT *JJJ       ENTER KEY FROM THE ABOVE LIST!  *;
+++1+++  250 INPUT F
         260 IF F>2 THEN 290
         270 FIND F+1
         280 OLD
+++1+++  290 PRINT *INVALID KEY NUMBER - REENTER  *;
         300 GO TO 250
+++2+++  310 PRINT *JEND OF PROGRAM*
         320 END

         330 REM ************************* END OF PROGRAM *************************
```

FILE # 2

```
         1 GO TO 100
         4 GO TO 250
         8 GO TO 1420

+++1+++  100 REM ****      PROGRAM TO PREPARE MIRAN 80 DATA FOR         ****
         110 REM           THE SYSTEM 2000 DATA BASE PROGRAM
         120 REM                VERSION 3 - 8/14/81
         130 REM
         140 REM                BY:  STEARNS-ROGER, INC.
         150 REM ****                M. E. MARTIN                       ****

         160 INIT
         170 SET KEY
         180 DIM A$(1),U$(18),V$(24),X$(104),Y$(445),Z$(106),R(54),Q(5)
         190 READ R,U$,V$

         200 REM

         210 T=0
         220 N$="                                X     X     X
         230 I$="X      X      X
         240 W$="RMA5510"
+++1+++  250 PAGE
         260 PRINT "JMERGE PROGRAM FOR MIRAN 80 DATA"

         270 REM
         280 REM ************ MOUNT INPUT DATA TAPE AND CHECK LABEL*************

+++1+++  290 PRINT "JINSERT MIRAN INPUT DATA TAPE INTO CONSOLE"
         300 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:  ";
         310 INPUT T$
         320 T$=SEG(T$,1,3)
         330 FIND 1
         340 INPUT @33,13:X$
         350 S$=SEG(X$,4,2)
         360 B$=SEG(X$,8,3)
         370 C$=SEG(X$,8,9)
         380 IF S$="09" AND B$=T$ THEN 440
         390 PRINT "JTHIS IS THE WRONG INPUT DATA TAPE"
         400 PRINT "JTHIS TAPE IS FOR DATA SHEET #";S$;" FOR ";C$
         410 GO TO 290

         420 REM
         430 REM ************ PREPARE OUTPUT DATA TAPE **************************

+++2+++  440 PRINT "JINSERT OUTPUT TAPE INTO UNIT 4924"
         450 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  ";
         460 INPUT U
         470 FIND @U:1
         480 PRINT "JDO YOU NEED TO LABEL THIS TAPE?  (ENTER Y OR N)  ";
         490 INPUT A$
         500 IF A$<>"Y" THEN 580
         510 PRINT "JHOW MUCH SPACE DO YOU NEED?  ";
         520 INPUT F
         530 MARK @U:1,F
         540 FIND @U:1
         550 Z$="RMA5500"&C$
         560 PRINT @U,12:Z$
```

```
        570 GO TO 680
+++1+++ 580 INPUT @0,13;Z$
        590 S$=SEG(Z$,4,2)
        600 B$=SEG(Z$,8,3)
        610 C$=SEG(Z$,8,9)
        620 IF S$="55" AND B$=T$ THEN 680
        630 PRINT "!THIS IS THE WRONG OUTPUT TAPE"
        640 PRINT "!THIS TAPE IS FOR #";S$;" FOR ";C$
        650 GO TO 440

        660 REM
        670 REM ************ PROCESS MIRAN DATA *********************************
+++2+++ 680 PRINT @41;"L";Z$
        690 INPUT @33;X$
+++1+++ 700 K1=0
        710 PRINT @41;
        720 Y$=X$
+++1+++ 730 IF TYP(0)=1 THEN 840
        740 INPUT @33;X$
        750 R$=SEG(X$,6,1)
        760 IF R$="1" THEN 870
        770 L=LEN(X$)
        780 L=L-36
        790 K1=K1+1
        800 Q$=SEG(X$,37,L)
        810 Y$=Y$&Q$
        820 Q(K1)=L
        830 GO TO 730
+++1+++ 840 T=1

        850 REM
        860 REM ************ NUMERICAL DATA ***) *********************************

+++1+++ 870 Z$=W$&H$
        880 I1=1
        890 FOR I=1 TO 6
        900  R$=SEG(Y$,R(I1),R(I1+2))
        910  Z$=REP(R$,R(I1+1),R(I1+2))
        920  I1=I1+3
        930 NEXT I
        940 D$=SEG(Z$,29,2)
        950 IF D$="FL" THEN 1030
        960 Z$=REP("X    X    ",31,8)
        970 J1=4
        980 J2=4
        990 N1=7
       1000 N2=19
       1010 I1=46
       1020 GO TO 1070
+++1+++ 1030 J1=1
       1040 J2=3
       1050 N1=1
       1060 N2=1
+++1+++ 1070 FOR J=J1 TO J2
       1080  FOR I=1 TO 3
       1090   R$=SEG(Y$,R(I1),R(I1+2))
       1100   Z$=REP(R$,R(I1+1),R(I1+2))
       1110   I1=I1+3
       1120  NEXT I
```

```
1130  R$=SEG(U$,N1,2)
1140  Z$=REP(R$,4,2)
1150  R$=SEG(V$,N2,6)
1160  Z$=REP(R$,20,6)
1170  PRINT @41:Z$
1180  PRINT @U,12:Z$
1190  N1=N1+2
1200  N2=N2+6
1210  IF K1=0 THEN 1360

1220  REM
1230  REM ************ COMMENT8 ****************************************

1240  L1=105
1250  FOR K=1 TO K1
1260   L2=Q(K)
1270   Z$=SEG(Z$,1,38)
1280   N$=SEG(U$,2*K+7,2)
1290   Z$=REP(N$,6,2)
1300   Q$=SEG(Y$,L1,L2)
1310   Z$=Z$&Q$
1320   PRINT @41:Z$
1330   PRINT @U,12:Z$
1340   L1=L1+L2
1350  NEXT K
+++1+++  1360  Z$=SEG(Z$,1,39)
1370  Z$=REP("10",6,2)
1380  Z$=Z$&I$
1390 NEXT J
1400 IF T=0 THEN 700
1410 GO TO 1440
+++1+++  1420 PRINT "J**** ABNORMAL PROGRAM END ****"
1430 GO TO 1450
+++1+++  1440 PRINT "JNORMAL PROGRAM END"
+++1+++  1450 PRINT @U,2:
1460 END

1470 REM
1480 REM ************ R ARRAY (54) ************************************

1490 DATA 8,8,2,12,10,6,20,27,4,24,26,1,25,16,4,29,31,8
1500 DATA 37,39,7,44,46,7,51,60,3
1510 DATA 54,39,7,61,46,7,68,60,3
1520 DATA 71,39,7,78,46,7,85,60,3
1530 DATA 88,53,7,95,39,7,102,60,3

1540 REM
1550 REM ************ U$ (18) ****************************************

1560 DATA "555657582021222324"

1570 REM
1580 REM ************ V$ (24) ****************************************

1590 DATA "PS    CG    CHCL3 CHALNG"

1600 REM
1610 REM ************ END OF PROGRAM **********************************
```

FILE # 3

```
        1 GO TO 100
        4 GO TO 1190
        8 GO TO 1190

+++1+++ 100 REM ****          PROGRAM TO MERGE INVENTORY DATA          ****
        110 REM      ALL INVENTORY DATA FOR A GIVEN DAY ARE WRITTEN TO ONE
        120 REM      FILE WHICH WILL BE TRANSMITTED TO THE UNIVAC 1108.
        130 REM                        VERSION 3 - 06/08/81
        140 REM
        150 REM                  B/I  STEARNS-ROGER, INC.
        160 REM ****                  M. E. MARTIN                    ****

        170 PAGE
        180 INIT
        190 SET KEY
        200 DIM D(12),W(6),A$(1),U$(6),X$(70),Z$(65)
        210 READ D,U$,W
        220 G$="
        230 C=0
        240 PRINT "DO YOU WANT TO MERGE INVENTORY DATA? (ENTER Y OR N)  "!
        250 INPUT A$
        260 IF A$<>"N" THEN 290
        270 PRINT "YOU ARE USING THE WRONG PROGRAM"
        280 GO TO 1190
+++1+++ 290 PRINT "INSERT THE INPUT DATA TAPE INTO THE CONSOLE"
        300 PRINT "ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK!  "!
        310 INPUT T$
        320 T$=SEG(T$,1,3)
        330 FIND 1
        340 INPUT @33:X$
        350 S$=SEG(X$,4,2)
        360 B$=SEG(X$,6,3)
        370 C$=SEG(X$,8,9)
        380 IF S$="10" AND B$=T$ THEN 440
        390 PRINT "THIS IS THE WRONG INPUT DATA TAPE"
        400 PRINT "THIS TAPE IS FOR DATA SHEET #"!S$!" FOR "!C$
        410 GO TO 1190

        420 REM
        430 REM ************ PREPARE OUTPUT DATA TAPE ***************************

+++2+++ 440 PRINT "INSERT OUTPUT TAPE INTO UNIT 4924"
        450 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE!  "!
        460 INPUT U
        470 FIND @U:1
        480 PRINT "DO YOU NEED TO LABEL THIS TAPE?  (ENTER Y OR N)  "!
        490 INPUT A$
        500 IF A$<>"Y" THEN 600
        510 PRINT "HOW MUCH SPACE DO YOU NEED?  "!
        520 INPUT F
        530 MARK @U:1,F
        540 FIND @U:1
        550 Z$="RMA6000"&C$
        560 Z$=Z$&G$
        570 PRINT @41:Z$
        580 PRINT @U,12:Z$
        590 GO TO 700
+++1+++ 600 INPUT @U,13:Z$
```

```
          610 S$=SEG(Z$,4,2)
          620 D$=SEG(Z$,8,3)
          630 D$=SEG(Z$,8,9)
          640 IF S$="60" AND D$=T$ THEN 700
          650 PRINT "THIS IS THE WRONG OUTPUT TAPE"
          660 PRINT "THIS TAPE IS FOR ";S$;" FOR ";D$
          670 GO TO 440

          680 REM
          690 REM ************ PROCESS INVENTORY DATA ****************************

+++2+++   700 FOR I=1 TO 6
          710  ON EOF (0) THEN 950
          720  IF I=1 THEN 770
          730  FIND I
          740  INPUT @33,13:X$

          750  REM
          760  REM ************ PROCESS INPUT FILE I ***********************

+++2+++   770  INPUT @33,13:X$
          780  IF C<>0 THEN 810
          790  GOSUB 1020
          800  W$="RMA6010"+E$
+++1+++   810  F$=SEG(X$,5,3)
          820  W$=REP(F$,5,3)
          830  X$=REP(W$,1,17)
          840  N1=N(I)
          850  F$=SEG(G$,1,N1)
          860  Z$=X$+F$
          870  Z=LEN(Z$)
          880  IF Z=65 THEN 920
          890  FOR K=Z+1 TO 65
          900   Z$=Z$+" "
          910  NEXT K
+++1+++   920  PRINT @41:Z$
          930  PRINT @0,12:Z$
          940  GO TO 770

-----------------------------------------------------------------------------
---1---   950  PRINT @41:"J"
          960  PRINT @41:"END OF FILE ";I
          970  PRINT @41:
          980 NEXT I
          990 GO TO 1210

         1000 REM
         1010 REM ************ SUBROUTINE 1 - CHANGE DATE TO JULIAN FORM *

-----------------------------------------------------------------------------

---2---  1020 D$=SEG(X$,12,6)
         1030 E$=SEG(D$,5,2)
         1040 E$=E$+"000"
         1050 N$=SEG(D$,3,2)
         1060 N1=VAL(N$)
         1070 N$=SEG(D$,1,2)
         1080 N2=VAL(N$)
         1090 N1=N(N1)+N2
         1100 N$=STR(N1)
```

```
         1110 N1=LEN(N$)-1
         1120 N$=SEG(N$,2,N1)
         1130 N2=6-N1
         1140 E$=REP(N$,N2,N1)
         1150 C=1
         1160 RETURN

         1170 REM ************ END OF SUPROUTINE 1 ********************************
         1180 REM

+++++++  1190 PRINT "J**** ABNORMAL PROGRAM END ****"
         1200 GO TO 1220
+++++++  1210 PRINT "JNORMAL PROGRAM END"
+++++++  1220 PRINT @0,2!
         1230 END

         1240 REM
         1250 REM ************ D ARRAY (12) ***************************************

         1260 DATA 0,31,59,90,120,151,181,212,243,273,304,334

         1270 REM
         1280 REM ************ U$ ARRAY (6) ***************************************

         1290 DATA "012345"

         1300 REM
         1310 REM ************ W ARRAY (6) ****************************************

         1320 DATA 0,0,39,43,43,43

         1330 REM
         1340 REM ************ END OF PROGRAM *************************************
```

FILE # 1

```
        1 GO TO 100
        4 GO TO 420
        8 GO TO 420

****1***  100 REM ****      DIRECTORY FOR TOTALS PROGRAMS      ****
          110 REM                 VERSION 4 - 5/12/81
          120 REM
          130 REM              BY:  STEARNS-ROGER INC.
          140 REM                   M.E. MARTIN
          150 REM ****                                          ****

          160 INIT
          170 PAGE
          180 SET KEY
          190 PRINT "        DIRECTORY FOR TOTALS PROGRAMS TO UPDATE"
          200 PRINT "        PIG AND DRUM TOTALS AND PRINT REPORTS"
          210 PRINT "JJ"
          220 PRINT " KEY    PROGRAM"
          230 PRINT " ---    -------"
          240 PRINT "  1     P1 - UPDATE PROCESSED ID SET TOTALS AND PRINT"
          250 PRINT "             A DAILY REPORT"
          260 PRINT "J  2     P2 - READ ID SET TOTALS TAPE (P1 OUTPUT) AND"
          270 PRINT "             PRINT REPORTS FOR ANY PERIOD OF TIME"
          280 PRINT "J  3     D1 - UPDATE DRUM TOTALS AND PRINT A DAILY REPORT"
          290 PRINT "J  4     D2 - READ DRUM TOTALS TAPE (D1 OUTPUT) AND PRINT"
          300 PRINT "             REPORTS FOR ANY PERIOD OF TIME"
          310 PRINT "J  5     T1 - UPDATE DOWNTIME TOTALS"
          320 PRINT "J  6     T2 - READ DOWNTIME TOTALS TAPE (T1 OUTPUT) AND"
          330 PRINT "             PRINT REPORTS FOR ANY PERIOD OF TIME"

          340 REM

          350 PRINT "JJJENTER KEY FROM THE ABOVE LIST:  ";
****1***  360 INPUT F
          370 IF F>6 THEN 400
          380 FIND F+1
          390 GOD
****1***  400 PRINT "  VALID KEY NUMBER - REENTER  ";
          410 GO TO 360
****2***  420 PRINT "JEND OF PROGRAM"
          430 END

          440 REM ***************** LIST DIRECTORY PROGRAM ***********************
```

FILE # 2

```
        1 GO TO 100
        4 GO TO 2500
        8 GO TO 2500

+++1+++ 100 REM ****                TOTALS - P1                    ****
        110 REM                  VERSION 7 - 10/20/81
        120 REM      THIS PROGRAM KEEPS A RUNNING COUNT OF THE ID SETS
        130 REM      IN THE INVENTORY.  INPUT DATA ARE FROM DATA SHEET
        140 REM      #10 - BUILDING 1611 RECEIPT INSPECTION DATA.
        150 REM      THE DAILY OUTPUT RECORD CONTAINS THE NUMBER OF EACH
        160 REM      TYPE OF SET PROCESSED THAT DAY AND THE ACCUMULATED
        170 REM      TOTAL OF SETS DESTROYED TO DATE.
        180 REM
        190 REM                  BY:  STEARNS-ROGER, INC.
        200 REM                       M.E.MARTIN
        210 REM ****                                                ****

        220 PAGE
        230 INIT
        240 SET KEY
        250 DIM C(7,3),T(7),K(9),M(3)
        260 DIM A$(1),K$(32),L$(70),W$(36),X$(69),Y$(20),Z$(70)
        270 PRINT "JDO YOU WANT TO UPDATE ID SET TOTALS? (ENTER Y OR N) ";
        280 INPUT A$
        290 IF A$<>"N" THEN 320
        300 PRINT "JYOU ARE USING THE WRONG TOTALS PROGRAM"
        310 GO TO 2500
+++1+++ 320 READ T,K$,L$
        330 READ Y$
        340 L$=L$&Y$
        350 READ W$
        360 FOR I=1 TO 9
        370  K(I)=0
        380 NEXT I
        390 M$="  0  0  0  0  0  0  0"
        400 G$="RMA50  "
        410 PRINT "JDO YOU HAVE DATA TO ENTER?  (ENTER Y OR N)  ";
        420 INPUT A$
        430 A6=1
        440 IF A$<>"N" THEN 540
        450 A6=0
+++1+++ 460 PRINT "JENTER TODAY'S DATE (DDMMYY)   ";
        470 INPUT V$
        480 L1=LEN(V$)
        490 IF L1=6 THEN 520
        500 PRINT "JTHE DATE MUST HAVE 6 CHARACTERS"
        510 GO TO 460
+++1+++ 520 IF G$&V$
        530 GO TO 1050
+++1+++ 540 PRINT "JINSERT THE INVENTORY DATA TAPE INTO THE CONSOLE"
        550 PRINT "JENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:   ";
        560 [illegible]
        570 [illegible]
        580 [illegible]
        590 INPUT [illegible]
        600 S$=SEG(Z$,4,2)
        610 B$=SEG(Z$,8,3)
        620 C$=SEG(Z$,8,9)
```

```
          630 IF S$="10" AND B$=I$ THEN 690
          640 PRINT "JTHIS IS THE WRONG INPUT DATA TAPE"
          650 PRINT "JTHIS TAPE IS FOR DATA SHEET #"ISS$I" FOR "IC$
          660 GO TO 2500

          670 REM
          680 REM ************ PROCESS INPUT DATA TOTALS ************************

+++1+++   690 INPUT @33IZ$
          700 I$=SEG(Z$,12,6)
          710 I$=C$&I$
          720 GO TO 760
          730 PRINT
+++4+++   740 IF TYP(0)=1 THEN 930
          750 INPUT @33IZ$
+++1+++   760 S$=SEG(Z$,26,1)
          770 IF S$<>"X" THEN 740
          780 S$=SEG(Z$,18,1)
          790 IF S$<>"X" THEN 820
          800 K(9)=K(9)+1
          810 GO TO 740
+++1+++   820 S$=SEG(Z$,18,4)
          830 K4=1
          840 FOR I=1 TO 8
          850  T$=SEG(K$,K4,4)
          860  IF S$<>T$ THEN 890
          870  K(I)=K(I)+1
          880  GO TO 740
+++1+++   890  K4=K4+4
          900 NEXT I
          910 PRINT "J"IS$I" IS NOT A VALID ID SET AND CANNOT BE COUNTED"
          920 GO TO 740
+++1+++   930 C(1,1)=K(1)+K(2)
          940 C(2,1)=K(3)
          950 C(3,1)=K(4)+K(5)
          960 C(4,1)=K(6)+K(7)
          970 C(5,1)=K(8)
          980 C(6,1)=K(9)
          990 C(7,1)=0
         1000 FOR I=1 TO 6
         1010  C(7,1)=C(7,1)+C(I,1)
         1020 NEXT I

         1030 REM
         1040 REM ************ PREPARE OUTPUT TAPE ****************************

+++1+++  1050 PRINT "JINSERT OUTPUT DATA TAPE (ID SET TOTALS) INTO UNIT 4924"
         1060 PRI "JENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  "I
         1070 INPUT U
         1080 PRINT "JDO YOU NEED TO INITIALIZE THIS TAPE?  (ENTER Y OR N)  "I
         1090 INPUT A$
         1100 FIND @U:1
         1110 IF A$<>"Y" THEN 1420
         1120 PRINT "JHOW MUCH SPACE DO YOU NEED?  "I
         1130 INPUT F
         1140 MARK @U:1,F
         1150 FIND @U:1
         1160 PRINT "JDO YOU NEED TO ENTER CUMULATIVE TOTALS?  (ENTER Y OR N)  "I
         1170 INPUT A$
         1180 IF A$<>"Y" THEN 1360
```

```
+++1+++  1190 PRINT "J"
         1200 X$=I$&M$
         1210 FOR I=1 TO 7
         1220  PRINT "ENTER CUMULATIVE TOTAL NO. "&I&"  "
         1230  INPUT U$
         1240  A=LEN(U$)
         1250  IF A=5 THEN 1290
         1260  FOR J=A+1 TO 5
         1270   U$=" "&U$
         1280  NEXT J
+++1+++  1290  X$=X$&U$
         1300 NEXT I
         1310 A=LEN(X$)
         1320 IF A=69 THEN 1380
         1330 PRINT "JCUMULATIVE TOTALS CANNOT HAVE MORE THAN 5 DIGITS"
         1340 PRINT "REENTER DATA FROM THE BEGINNING"
         1350 GO TO 1190
+++1+++  1360 X$=I$&M$
         1370 X$=X$&"    0    0    0    0    0    0    0"
+++1+++  1380 PRINT @U,12;X$
         1390 GO TO 1460
+++1+++  1400 INPUT @U,6;F
         1410 IF F=1 THEN 1460
+++1+++  1420 INPUT @U,13;X$
         1430 GO TO 1400

         1440 REM
         1450 REM ************ UPDATE WITH A ZERO RECORD ************************

+++2+++  1460 IF A6=1 THEN 1710
         1470 X$=REP(V$,8,6)
         1480 X$=REP(M$,14,21)
         1490 PRINT @U,12;X$
         1500 Q$=X$
         1510 X$=""
         1520 K2=35
         1530 FOR I=1 TO 7
         1540  R$=SEG(Q$,K2,5)
         1550  R=T(I)-VAL(R$)
         1560  R$=STR(R)
         1570  R=LEN(R$)
         1580  IF R=5 THEN 1650
         1590  IF R>5 THEN 1640
         1600  FOR J=R+1 TO 5
         1610   R$=" "&R$
         1620  NEXT J
         1630  GO TO 1650
+++1+++  1640  R$=SEG(R$,R-4,5)
+++2+++  1650  X$=X$&R$
         1660  K2=K2+5
         1670 NEXT I
         1680 GO TO 2050

         1690 REM
         1700 REM ************ UPDATE LAST RECORD ********************************

+++1+++  1710 K2=35
         1720 FOR I=1 TO 7
         1730  P$=SEG(X$,K2,5)
         1740  C(I,2)=VAL(P$)+C(I,1)
```

```
         1750 'C(I,3)=T(I)-C(I,2)

         1760  REM ****  C(I,1) IS DAILY TOTAL;  C(I,2) IS ACCUMULATIVE TOTAL
         1770  REM ****  C(I,3) IS NUMBER OF ID SETS REMAINING

         1780  K2=K2+5
         1790 NEXT I
         1800 X$=I$
         1810 M(1)=3
         1820 M(2)=5
         1830 M(3)=5
         1840 FOR N=1 TO 3
         1850  M1=M(N)
         1860  FOR I=1 TO 7
         1870   R$=STR(C(I,N))
         1880   R=LEN(R$)
         1890   IF R=M1 THEN 1960
         1900   IF R>M1 THEN 1950
         1910   FOR J=R+1 TO M1
         1920    R$=" "+R$
         1930   NEXT J
         1940   GO TO 1960
+++1+++  1950   R$=SEG(R$,R-M1+1,M1)
+++2+++  1960   X$=X$+R$
         1970  NEXT I
         1980  GO TO N OF 2020,1990,2050
+++1+++  1990  PRINT @0,12;X$
         2000  D$=X$
         2010  X$=""
+++1+++  2020 NEXT N

         2030 REM
         2040 REM ************ PROCESS DATE ************************************

+++2+++  2050 E$=SEG(I$,8,2)
         2060 F$=SEG(I$,10,2)
         2070 H$=SEG(I$,12,2)
         2080 F=VAL(F$)
         2090 F=3*F-2
         2100 F$=SEG(W$,F,3)
         2110 D$="          "
         2120 D$=REP(E$,1,2)
         2130 D$=REP(F$,4,3)
         2140 D$=REP(H$,8,2)

         2150 REM
         2160 REM ************* PRINT DAILY REPORT *********************************

         2170 A=41
+++1+++  2180 GOSUB 2540
         2190 K1=1
         2200 K2=14
         2210 K3=35
         2220 K4=1
         2230 FOR I=1 TO 7
         2240  E$=SEG(L$,K1,10)
         2250  F$=SEG(Q$,K2,3)
         2260  H$=SEG(Q$,K3,5)
         2270  S$=SEG(X$,K4,5)
         2280  PRINT @A: USING "6X,10A,3A,8X,10A,5A,8X,10A,5A":E$,F$,E$,H$,E$,S$
```

```
          2290  K1=K1+10
          2300  K2=K2+3
          2310  K3=K3+5
          2320  K4=K4+5
          2330 NEXT I
          23?  GOSUB 2760
          2350 IF A=32 THEN 2430
          2360 PRINT "DO YOU WANT A HARD COPY?  (ENTER Y OR N)  "!
          2370 INPUT A$
          2380 IF A$<>"Y" THEN 2470
          2390 PAGE
          2400 MOVE 0,100
          2410 A=32
          2420 GO TO 2180
+++1+++   2430 PRINT @A,26;3
          2440 MOVE 0,0
          2450 PRINT
          2460 PRINT @A,26;0
+++1+++   2470 PRINT "NORMAL END OF PROGRAM"
          2480 PRINT @0,2;
          2490 GO TO 3110
+++4+++   2500 PRINT "J**** ABNORMAL END OF PROGRAM ****"
          2510 GO TO 3110

          2520 REM
          2530 REM ************* SUBROUTINE 1 - PRINT PAGE HEADING ****************

-------------------------------------------------------------------------------------

---1---   2540 IF A=32 THEN 2620
          2550 PRINT @A;"L"
          2560 PRINT @A; USING "@A,49X,6A,9A";"DRXTH-SE","DATE: ",D$
          2570 PRINT @A;"JJ"
          2580 PRINT @A; USING "39A,S";"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
          2590 PRINT @A; USING "@A";"USATHAMA"
          2600 PRINT @A;"J"
          2610 GO TO 2670
+++1+++   2620 PRINT @A; USING "@A,49X,6A,9A";"DRXTH-SE","DATE: ",D$
          2630 PRINT @A;
          2640 PRINT @A; USING "39A,S";"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
          2650 PRINT @A; USING "@A";"USATHAMA"
          2660 PRINT @A;
+++1+++   2670 PRINT @A; USING "41A";"SUBJECT:  ID SETS DAILY OPERATIONS REPORT"
          2680 PRINT @A;
          2690 PRINT @A; USING "6X,34A,S";"-----------TYPES AND TOTALS OF ID "
          2700 PRINT @A; USING "25A";"SETS PROCESSED----------"
          2710 PRINT @A; USING "6X,13A,8X,15A,S";"----TODAY----","-SINCE STARTUP-"
          2720 PRINT @A; USING "8X,15A";"---REMAINING---"
          2730 PRINT @A;
          2740 RETURN

          2750 REM ************ END OF SUBROUTINE 1 ******************************
          2760 REM
          2770 REM ************ SUBROUTINE 2 - PRINT END OF PAGE ******************

-------------------------------------------------------------------------------------

---1---   2780 N$="_____"
          2790 M$="_____"
          2792 PRINT @A;"JJJJJJJJJJJJJJJJJJJJ"
```

```
          2795 GO TO 3060

          2798 REM ******** SKIP PART OF OUTPUT

          2800 IF A=32 THEN 2840
          2810 N=3
          2820 PRINT @A:"JJ"
          2830 GO TO 2860
+++1+++   2840 N=2
          2850 PRINT @A:
+++1+++   2860 PRINT @A:"OPERATIONAL REMARKS:"
          2870 PRINT @A:
          2880 PRINT @A: USING "2X,25A,S"!"1.  PROBLEMS/SOLUTIONS:
          2890 PRINT @A: USING "30A,15A"!N$,M$
          2900 FOR I=1 TO N
          2910  PRINT @A:
          2920  PRINT @A: USING 2930:N$,N$,"__________"
          2930  IMAGE 2X,30A,30A,10A
          2940 NEXT I
          2950 PRINT @A:
          2960 PRINT @A: USING "2X,37A,S"!"2.  EXPOSURES/EMISSIONS/EXPLOSIONS:
          2970 PRINT @A: USING "30A,3A"!N$,"___"
          2980 FOR I=1 TO N
          2990  PRINT @A:
          3000  PRINT @A: USING 2930:N$,N$,"__________"
          3010 NEXT I
          3020 IF A=32 THEN 3050
          3030 PRINT @A:"JJJ"
          3040 GO TO 3060
+++1+++   3050 PRINT @A:"JJ"

          3055 REM ******** END OF SKIPPED OUTPUT

+++2+++   3060 PRINT @A: USING "2X,15A,1A,12X,15A,12X,15A"!M$,"_",M$,M$
          3070 PRINT @A: USING 3080:"SUBMITTED BY","REVIEWED BY","APPROVED BY"
          3080 IMAGE 4X,12A,16X,11A,16X,11A
          3090 RETURN

          3100 REM ************ END OF SUBROUTINE 2 ********************************

+++2+++   3110 END

          3120 REM
          3130 REM ************ T ARRAY (7) - NUMBER OF ID SETS. ******************

          3140 DATA 806,1335,10799,497,94,6166,19697

          3150 REM
          3160 REM ************ K$ ARRAY (32) ************************************

          3170 DATA "K941K942K945K951K952K953K954K955"

          3180 REM
          3190 REM ************ L$ ARRAY (70) ************************************

          3200 DATA "K941/942  K945      K951/952  K953/954  K955      "
          3210 DATA "X-TYPE    TOTAL     "

          3220 REM
          3230 REM ************ W$ ARRAY (36) ************************************
```

```
3240 DATA *JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC*

3250 REM
3260 REM ************************ END OF PROGRAM *************************
```

FILE # 3

```
         1 GO TO 100
         4 FIND @U:1
         5 INPUT @U,13:Z$
         6 GO TO 480
         8 GO TO 1930

+++1+++  100 REM ****                    TOTALS - P2                    ****
         110 REM                       VERSION 7 - 10/20/81
         120 REM      THIS PROGRAM PRINTS AN OPERATIONS REPORT OF TOTAL ID
         130 REM      SETS PROCESSED OVER A SPECIFIED PERIOD OF TIME.
         140 REM      INPUT DATA ARE FROM THE 'ID SET TOTALS' TAPE CREATED BY
         150 REM      THE P1 PROGRAM FOR BLDG 1611 RECEIPT INSP. DATA. (#10).
         160 REM
         170 REM                  BY:  STEARNS-ROGER, INC.
         180 REM                       M.E.MARTIN
         190 REM ****                                                   ****

         200 PAGE
         210 INIT
         220 SET KEY
         230 DIM C(7,4),T(7),A$(1),K$(32),L$(70),W$(36),Y$(69),Z$(69)
         240 PRINT "DO YOU WANT TO PRINT ID SET TOTALS? (ENTER Y OR N) "
         250 INPUT A$
         260 IF A$="Y" THEN 290
         270 PRINT "YOU ARE USING THE WRONG TOTALS PROGRAM"
         280 GO TO 1930
+++1+++  290 READ T,K$,L$
         300 READ P$
         310 L$=L$&P$
         320 READ W$
         330 PRINT "INSERT THE INPUT DATA TAPE (ID SET TOTALS) INTO UNIT 4924"
         340 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE "
         350 INPUT U
         360 FIND @U:1
         370 INPUT @U,13:Z$
         380 S$=SEG(Z$,4,2)
         390 T$=SEG(Z$,8,6)
         400 U$=SEG(T$,3,2)
         410 V$=SEG(T$,1,2)
         420 T$=SEG(T$,5,2)
         430 T$=T$&U$
         440 T$=T$&V$
         450 IF S$="50" THEN 480
         460 PRINT "THIS IS THE WRONG INPUT DATA TAPE"
         470 GO TO 1930
+++4+++  480 PRINT "ENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY)  "
         490 INPUT B$
         500 L6=LEN(B$)
         510 IF L6=6 THEN 540
         520 PRINT "WRONG LENGTH ON BEGINNING DATE - REENTER"
         530 GO TO 480
+++1+++  540 U$=SEG(B$,3,2)
         550 V$=SEG(B$,1,2)
         560 B$=SEG(B$,5,2)
         570 B$=B$&U$
         580 B$=B$&V$
+++1+++  590 PRINT "ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY)  "
         600 INPUT C$
```

```
          610 L6=LEN(C$)
          620 IF L6=6 THEN 650
          630 PRINT "WRONG LENGTH ON ENDING DATE - REENTER"
          640 GO TO 590
+++1+++   650 U$=SEG(C$,3,2)
          660 V$=SEG(C$,1,2)
          670 C$=SEG(C$,5,2)
          680 C$=C$&U$
          690 C$=C$&V$
          700 IF B$<=C$ THEN 740
          710 PRINT "ENDING DATE MUST BE LATER THAN BEGINNING DATE"
          720 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "
          730 GO TO 1060
+++1+++   740 IF C$<T$ THEN 1350

          750 REM
          760 REM ************ PROCESS INPUT DATA TOTALS ************************

          770 E$=B$
          780 F1=0
+++2+++   790 INPUT @0,6:L
          800 IF L=1 THEN 970
          810 INPUT @0,13:Z$
          820 I$=SEG(Z$,8,6)
          830 U$=SEG(I$,3,2)
          840 V$=SEG(I$,1,2)
          850 I$=SEG(I$,5,2)
          860 I$=I$&U$
          870 I$=I$&V$
          880 IF I$<E$ THEN 790
          890 IF F1=1 THEN 990
          900 S$=SEG(Z$,14,56)
          910 F1=1
          920 E$=C$
          930 IF B$<>C$ THEN 790
          940 IF I$<>B$ THEN 1350
          950 T$=S$
          960 GO TO 1000
+++1+++   970 IF F1=0 THEN 1350
          980 I$=C$
+++1+++   990 T$=SEG(Z$,14,56)
+++1+++   1000 R$=S$
          1010 FOR J=1 TO 3 STEP 2
          1020  K1=1
          1030  K2=22
          1040  FOR I=1 TO 7
          1050   E$=SEG(R$,K1,3)
          1060   F$=SEG(R$,K2,5)
          1070   C(I,J)=VAL(E$)
          1080   C(I,J+1)=VAL(F$)
          1090   K1=K1+3
          1100   K2=K2+5
          1110  NEXT I
          1120  IF B$=C$ THEN 1300
          1130  R$=T$
          1140 NEXT J

          1150 REM
          1160 REM ************ TOTALS FOR MORE THAN ONE DAY **********************
```

```
          1170 FOR I=1 TO 7
          1180  C(I,2)=C(I,2)-C(I,1)
          1190  IF I$=C$ THEN 1210
          1200  C(I,4)=C(I,4)-C(I,3)
+++1+++   1210  C(I,1)=C(I,4)-C(I,2)
          1220  C(I,3)=T(I)-C(I,4)
          1230 NEXT I
          1240 GO TO 1400

          1250 REM
          1260 REM ****  C(I,1) IS TOTAL FOR PERIOD;  C(I,4) IS ACCUMULATIVE TOTAL
          1270 REM ****  C(I,3) IS NO. OF REMAINING SETS
          1280 REM
          1290 REM ************ TOTALS FOR ONLY ONE DAY ***************************

+++1+++   1300 FOR I=1 TO 7
          1310  C(I,4)=C(I,2)
          1320  C(I,3)=T(I)-C(I,4)
          1330 NEXT I
          1340 GO TO 1400
+++3+++   1350 PRINT "PROGRAM IS UNABLE TO FIND DATE"
          1360 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "!
          1370 GO TO 1860

          1380 REM
          1390 REM ************ PROCESS REPORT DATES ******************************

++2+++    1400 P$=B$
          1410 GOSUB 2620
          1420 X$=B$
          1430 P$=C$
          1440 GOSUB 2620
          1450 Y$=B$

          1460 REM
          1470 REM ************ PRINT REPORT ***********************************

          1480 A=41
+++1+++   1490 GOSUB 1970
          1500 K1=1
          1510 FOR I=1 TO 7
          1520  E$=SEG(L$,K1,10)
          1530  FOR J=1 TO 4
          1540   GO TO J OF 1550,1680,1550,1550
+++3+++   1550   R$=STR(C(I,J))
          1560   R=LEN(R$)
          1570   IF R=5 THEN 1640
          1580   IF R>5 THEN 1630
          1590   FOR K=R+1 TO 5
          1600    R$=" "&R$
          1610   NEXT K
          1620   GO TO 1640
++1+++    1630   R$=SEG(R$,R-4,5)
++2+++    1640   GO TO J OF 1650,1680,1670,1680
++1+++    1650   F$=R$
          1660   GO TO 1680
++1+++    1670   H$=R$
++4+++    1680  NEXT J
          1690  PRINT @A: USING "6X,10A,5A,8X,10A,5A,8X,10A,5A"1E$,F$,E$,R$,E$,H$
          1700  K1=K1+10
```

```
         1710 NEXT I
         1720 GOSUB 2210
         1730 IF A=32 THEN 1810
         1740 PRINT "DO YOU WANT A HARD COPY? (ENTER Y OR N)  "
         1750 INPUT A$
         1760 IF A$<>"Y" THEN 1850
         1770 PAGE
         1780 MOVE 0,100
         1790 A=32
         1800 GO TO 1490
+++1+++  1810 PRINT @A,26:3
         1820 MOVE 0,0
         1830 PRINT
         1840 PRINT @A,26:0
+++1+++  1850 PRINT "DO YOU WANT TO PRINT ANOTHER REPORT?  (ENTER Y OR N). ";
+++2+++  1860 INPUT A$
         1870 IF A$<>"Y" THEN 1910
         1880 FIND @U:1
         1890 INPUT @U,13:Z$
         1900 GO TO 480
+++1+++  1910 PRINT "NORMAL END OF PROGRAM"
         1920 GO TO 2760
+++3+++  1930 PRINT "**** ABNORMAL END OF PROGRAM ****"
         1940 GO TO 2760

         1950 REM
         1960 REM ************* SUBROUTINE 1 - PRINT PAGE HEADING ****************

---1---  1970 IF A=32 THEN 2050
         1980 PRINT @A:"L"
         1990 PRINT @A: USING "8A":"DRXTH-SE"
         2000 PRINT @A:"JJ"
         2010 PRINT @A: USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
         2020 PRINT @A: USING "8A":"USATHAMA"
         2030 PRINT @A:"J"
         2040 GO TO 2080
+++1+++  2050 PRINT @A: USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
         2060 PRINT @A: USING "8A,12X,8A":"USATHAMA","DRXTH-SE"
         2070 PRINT @A:
+++1+++  2080 PRINT @A: USING "35A":"SUBJECT:  ID SETS OPERATIONS REPORT"
         2090 PRINT @A:
         2100 PRINT @A: USING "14A,5X,9A,3A,9A":"REPORT PERIOD:",X$," - ",Y$
         2110 PRINT @A:
         2120 PRINT @A: USING "6X,35A,S":"------------TYPES AND TOTALS OF ID "
         2130 PRINT @A: USING "26A":"SETS PROCESSED------------"
         2140 PRINT @A: USING "6X,15A,8X,7A,S":"----PERIOD-----","-SINCE "
         2150 PRINT @A: USING "8A,0X,15A":"STARTUP-","---REMAINING---"
         2160 PRINT @A:
         2170 RETURN

         2180 REM ************* END OF SUBROUTINE 1 ******************************
         2190 REM
         2200 REM ************* SUBROUTINE 2 - PRINT END OF PAGE *****************

---1---  2210 N$="--------------------------------"
         2220 M$="----------------"
```

```
          2230 PRINT @A:"JJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJ"
          2240 GO TO 2560

          2250 REM ******** SKIP PART OF OUTPUT

          2260 IF A=32 THEN 2330
          2270 N=3
          2280 PRINT @A:"JJ"
          2290 GO TO 2350
          2300 IF A=32 THEN 2330
          2310 PRINT @A:"JJJ"
          2320 GO TO 2340
+++2+++   2330 N=2
+++1+++   2340 PRINT @A:
+++1+++   2350 PRINT @A:"OPERATIONAL REMARKS:"
          2360 PRINT @A:
          2370 PRINT @A: USING "2X,25A,S":1.  PROBLEMS/SOLUTIONS:  "
          2380 PRINT @A: USING "30A,15A":IN$,M$
          2390 FOR I=1 TO N
          2400  PRINT @A:
          2410  PRINT @A: USING 2420:N$,N$,"__________"
          2420  IMAGE 2X,30A,30A,10A
          2430 NEXT I
          2440 PRINT @A:
          2450 PRINT @A: USING "2X,37A,S":2.  EXPOSURES/EMISSIONS/EXPLOSIONS:  "
          2460 PRINT @A: USING "30A,3A":IN$,"___"
          2470 FOR I=1 TO N
          2480  PRINT @A:
          2490  PRINT @A: USING 2420:N$,N$,"__________"
          2500 NEXT I
          2510 IF A=32 THEN 2540
          2520 PRINT @A:"JJJ"
          2530 GO TO 2560
+++1+++   2540 PRINT @A:"JJ"

          2550 REM ******** END OF SKIPPED OUTPUT

+++2+++   2560 PRINT @A: USING "2X,15A,1A,12X,15A,12X,15A":IM$,"_",M$,M$
          2570 PRINT @A: USING 2580:"SUBMITTED BY","REVIEWED BY","APPROVED BY"
          2580 IMAGE 4X,12A,16X,11A,16X,11A
          2590 RETURN

          2600 REM ************ END OF SUBROUTINE 2 ********************************
          2610 REM
-------------------------------------------------------------------------------
---2---   2620 REM ************ SUBROUTINE 3 - CONVERT DATE ********************
          2630 E$=SEG(D$,5,2)
          2640 F$=SEG(D$,3,2)
          2650 M$=SEG(D$,1,2)
          2660 F=VAL(F$)
          2670 F=3*F-2
          2680 F$=SEG(W$,F,3)
          2690 D$="        "
          2700 D$=REP(E$,1,2)
          2710 D$=REP(F$,4,3)
          2720 D$=REP(M$,8,2)
          2730 RETURN
```

```
2740 REM ************ END OF SUBROUTINE 3 ****************************
2750 REM
+++2+++ 2760 END
2770 REM
2780 REM ************ T ARRAY (7) - NUMBER OF ID SETS ****************
2790 DATA 806,1335,10799,497,94,6166,19697
2800 REM
2810 REM ************ K$ ARRAY (32) ***********************************
2820 DATA "K941K942K945K951K952K953K954K955"
2830 REM
2840 REM ************ L$ ARRAY (70) ***********************************
2850 DATA "K941/942  K945      K951/952  K953/954  K955
2860 DATA "X-TYPE    TOTAL     "
2870 REM
2880 REM ************ W$ ARRAY (36) ***********************************
2890 DATA "JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC"
2900 REM
2910 REM ********************** END OF PROGRAM **********************
```

FILE # 4

```
         1 GO TO 100
         4 GO TO 2100
         8 GO TO 2100

+++1+++  100 REM ****                    TOTALS - D1                          ****
         110 REM                        VERSION 4 - 5/26/81
         120 REM       THIS PROGRAM KEEPS A RUNNING COUNT OF THE DRUMS
         130 REM       IN THE INVENTORY.  INPUT DATA ARE FROM DATA SHEETS
         140 REM         #13 - PROCESS DATA RESIDUE AREA,
         150 REM         #14 - PROCESS DATA, SPRAY DRYER,
         160 REM         #15 - PROCESS DATA, ELECTROSTATIC PRECIPITATOR.
         170 REM       THE DAILY OUTPUT RECORD CONTAINS THE NUMBER OF
         180 REM       EACH TYPE OF DRUM PROCESSED THAT DAY AND THE
         190 REM       CUMULATIVE TOTALS.
         200 REM
         210 REM                    BY:  STEARNS-ROGER, INC
         220 REM                         M E MARTIN
         230 REM ****                                                        ****
         240 REM

         250 PAGE
         260 INIT
         270 SET KEY
         280 DIM C(4,2),M(2),A$(1),L$(60),W$(36),X$(45),Z$(27)
         290 PRINT "DDO YOU WANT TO UPDATE DRUM TOTALS? (ENTER Y OR N) "
         300 INPUT A$
         310 IF A$<>"N" THEN 340
         320 PRINT "YOU ARE USING THE WRONG TOTALS PROGRAM"
         330 GO TO 2100
+++1+++  340 READ L$,W$
         350 FOR I=1 TO 4
         360   C(I,1)=0
         370 NEXT I
         380 M$="  0  0  0  0"
         390 G$="RMA51  "
         400 PRINT "DDO YOU HAVE DATA TO ENTER?  (ENTER Y OR N)  "
         410 INPUT A$
         420 A6=1
         430 IF A$<>"N" THEN 530
         440 A6=0
+++1+++  450 PRINT "ENTER TODAY'S DATE (DDMMYY)  "
         460 INPUT V$
         470 L1=LEN(V$)
         480 IF L1=6 THEN 510
         490 PRINT "THE DATE MUST HAVE 6 CHARACTERS"
         500 GO TO 450
+++1+++  510 I$=G$&V$
         520 GO TO 890
+++1+++  530 N=1
         540 N1=13
         550 PRINT "INSERT THE INVENTORY DATA TAPE INTO THE CONSOLE"
         560 PRINT "ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK!   "
         570 INPUT T$
         580 IF SEG(T$,1,3)
+++1+++  590 FIND #3
         600 INPUT @33:Z$
         610 S$=SEG(Z$,4,2)
         620 S=VAL(S$)
```

```
          630 B$=SEG(Z$,8,3)
          640 C$=SEG(Z$,8,9)
          650 IF S=N1 AND B$=T$ THEN 710
          660 PRINT "JTHIS IS THE WRONG INPUT DATA TAPE"
          670 PRINT "JTHIS TAPE IS FOR DATA SHEET #"|S$|" FOR "|C$
          680 GO TO 2100

          690 REM
          700 REM ************ PROCESS INPUT DATA TOTALS **************************

+++1+++   710 IF TYP(0)=1 THEN 800
          720 INPUT @33:Z$
          730 I$=SEG(Z$,12,6)
          740 I$=G$|I$
          750 GO TO 780
+++1+++   760 IF TYP(0)=1 THEN 800
          770 INPUT @33:Z$
+++1+++   780 C(N,1)=C(N,1)+1
          790 GO TO 760
+++2+++   800 IF N=3 THEN 840
          810 N=N+1
          820 N1=N1+1
          830 GO TO 590
+++1+++   840 FOR I=1 TO 3
          850  C(4,1)=C(4,1)+C(I,1)
          860 NEXT I

          870 REM
          880 REM ************ PREPARE OUTPUT TAPE ********************************

+++1+++   890 PRINT "JJINSERT OUTPUT DATA TAPE (DRUM TOTALS) INTO UNIT 4924"
          900 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  "|
          910 INPUT U
          920 PRINT "JDO YOU NEED TO INITIALIZE THIS TAPE?  (ENTER Y OR N)  "|
          930 INPUT A$
          940 FIND @U:1
          950 IF A$<>"Y" THEN 1260
          960 PRINT "JHOW MUCH SPACE DO YOU NEED?  "|
          970 INPUT F
          980 MARK @U:1,F
          990 FIND @U:1
          1000 PRINT "JDO YOU NEED TO ENTER CUMULATIVE TOTALS?  (ENTER Y OR N)  "|
          1010 INPUT A$
          1020 IF A$<>"Y" THEN 1200
+++1+++   1030 PRINT "J"
          1040 X$=I$|N$
          1050 FOR I=1 TO 4
          1060  PRINT "ENTER CUMULATIVE TOTAL NO. "|I|"   "|
          1070  INPUT U$
          1080  A=LEN(U$)
          1090  IF A=5 THEN 1130
          1100  FOR J=A+1 TO 5
          1110   U$="0"|U$
          1120  NEXT J
+++1+++   1130  X$=X$|U$
          1140 NEXT I
          1150 A=LEN(X$)
          1160 IF A=45 THEN 1220
          1170 PRINT "JCUMULATIVE TOTALS CANNOT HAVE MORE THAN 5 DIGITS"
          1180 PRINT "REENTER DATA FROM THE BEGINNING"
```

```
          1190 GO TO 1030
 +++1+++  1200 X$=I$&M$
          1210 X$=X$&"    0    0    0    0"
 +++1+++  1220 PRINT @U,12;X$
          1230 GO TO 1300
 +++1+++  1240 INPUT @U,6;F
          1250 IF F=1 THEN 1300
 +++1+++  1260 INPUT @U,13;X$
          1270 GO TO 1240

          1280 REM
          1290 REM ************ UPDATE WITH A ZERO RECORD ************************

 +++2+++  1300 IF A6=1 THEN 1370
          1310 X$=REP(V$,8,6)
          1320 X$=REP(M$,14,12)
          1330 PRINT @U,12;X$
          1340 GO TO 1650

          1350 REM
          1360 REM ************ UPDATE LAST RECORD ******************************

 +++1+++  1370 K2=26
          1380 FOR I=1 TO 4
          1390  P$=SEG(X$,K2,5)
          1400  C(I,2)=VAL(P$)+C(I,1)

          1410  REM **** C(I,1) IS DAILY TOTAL)  C(I,2) IS ACCUMULATIVE TOTAL

          1420  K2=K2+5
          1430 NEXT I
          1440 X$=I$
          1450 M(1)=3
          1460 M(2)=5
          1470 FOR N=1 TO 2
          1480  M1=M(N)
          1490  FOR I=1 TO 4
          1500   R$=STR(C(I,N))
          1510   R=LEN(R$)
          1520   IF R=M1 THEN 1590
          1530   IF R>M1 THEN 1590
          1540   FOR J=R+1 TO M1
          1550    R$=" "&R$
          1560   NEXT J
          1570   GO TO 1590
 +++1+++  1580   R$=SEG(R$,R-M1+1,M1)
 +++2+++  1590   X$=X$&R$
          1600  NEXT I
          1610 NEXT N
          1620 PRINT @U,12;X$

          1630 REM
          1640 REM ************ PROCESS DATE ************************************

 +++1+++  1650 E$=SEG(I$,8,2)
          1660 F$=SEG(I$,10,2)
          1670 H$=SEG(I$,12,2)
          1680 F=VAL(F$)
          1690 F=3*F-2
          1700 F$=SEG(W$,F,3)
```

```
          1710 D$="
          1720 D$=REP(E$,1,2)
          1730 D$=REP(F$,4,3)
          1740 D$=REP(H$,8,2)

          1750 REM
          1760 REM ************ PRINT DAILY REPORT *********************************

          1770 A=41
 +++1+++  1780 GOSUB 2140
          1790 K1=1
          1800 K2=14
          1810 K3=26
          1820 K4=1
          1830 FOR I=1 TO 4
          1840  E$=SEG(L$,K1,15)
          1850  F$=SEG(X$,K2,3)
          1860  H$=SEG(X$,K3,5)
          1870  PRINT @A: USING "9X,15A,3A,13X,15A,5A":E$,F$,E$,H$
          1880  K1=K1+15
          1890  K2=K2+3
          1900  K3=K3+5
          1910  IF I<>4 THEN 1930
          1920  PRINT
 +++1+++  1930 NEXT I
          1940 GOSUB 2380
          1950 IF A=32 THEN 2030
          1960 PRINT "DO YOU WANT A HARD COPY?  (ENTER Y OR N)  ";
          1970 INPUT A$
          1980 IF A$<>"Y" THEN 2070
          1990 PAGE
          2000 MOVE 0,100
          2010 A=32
          2020 GO TO 1780
 +++1+++  2030 PRINT @A,26:3
          2040 MOVE 0,0
          2050 PRINT
          2060 PRINT @A,26:0
 +++1+++  2070 PRINT "NORMAL END OF PROGRAM"
          2080 PRINT @0,2:
          2090 GO TO 2710
 +++4+++  2100 PRINT "**** ABNORMAL END OF PROGRAM ****"
          2110 GO TO 2710

          2120 REM
          2130 REM ************ SUBROUTINE 1 - PRINT PAGE HEADING ****************
-------------------------------------------------------------------------------
 ---1---  2140 IF A=32 THEN 2220
          2150 PRINT @A:"L"
          2160 PRINT @A: USING "8A,49X,6A,9A":"DRXTH-SE","DATE: ",D$
          2170 PRINT @A:"JJ"
          2180 PRINT @A: USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
          2190 PRINT @A: USING "8A":"USAIHAMA"
          2200 PRINT @A:"J"
          2210 GO TO 2270
 +++1+++  2220 PRINT @A: USING "8A,49X,6A,9A":"DRXTH-SE","DATE: ",D$
          2230 PRINT @A:
          2240 PRINT @A: USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
```

```
         2250 PRINT @A: USING "8A":"USATHAMA"
         2260 PRINT @A:
+++1+++  2270 PRINT @A: USING "41A":"SUBJECT:  ID SETS DAILY OPERATIONS REPORT"
         2280 PRINT @A:
         2290 PRINT @A: USING "9X,28A,S":"--------TYPES AND TOTALS OF "
         2300 PRINT @A: USING "23A":"DRUMS PROCESSED--------"
         2310 PRINT @A: USING "9X,18A,13X,S":"------TODAY-------"
         2320 PRINT @A: USING "20A":"---SINCE STARTUP----"
         2330 PRINT @A:
         2340 RETURN

         2350 REM ************ END OF SUBROUTINE 1 ******************************
         2360 REM
         2370 REM ************ SUBROUTINE 2 - PRINT END OF PAGE ****************

-----------------------------------------------------------------------------------------------

---1---  2380 N$="_______________________________"
         2390 M$="_______________"
         2400 IF A=32 THEN 2440
         2410 N=3
         2420 PRINT @A:"JJ"
         2430 GO TO 2460
+++1+++  2440 N=2
         2450 PRINT @A:
+++1+++  2460 PRINT @A:"OPERATIONAL REMARKS:"
         2470 PRINT @A:
         2480 PRINT @A: USING "2X,25A,S":"1.  PROBLEMS/SOLUTIONS:  "
         2490 PRINT @A: USING "30A,15A":N$,M$
         2500 FOR I=1 TO 3
         2510  PRINT @A:
         2520  PRINT @A: USING 2530:N$,N$,"__________"
         2530  IMAGE 2X,30A,30A,10A
         2540 NEXT I
         2550 PRINT @A:
         2560 PRINT @A: USING "2X,37A,S":"2.  EXPOSURES/EMISSIONS/EXPLOSIONS:  "
         2570 PRINT @A: USING "30A,3A":N$,"___"
         2580 FOR I=1 TO N
         2590  PRINT @A:
         2600  PRINT @A: USING 2530:N$,N$,"__________"
         2610 NEXT I
         2620 IF A=32 THEN 2650
         2630 PRINT @A:"JJJ"
         2640 GO TO 2660
+++1+++  2650 PRINT @A:"JJ"
+++1+++  2660 PRINT @A: USING "2X,15A,1A,12X,15A,12X,15A":M$,"_",M$,M$
         2670 PRINT @A: USING 2680:"SUBMITTED BY","REVIEWED BY","APPROVED BY"
         2680 IMAGE 4X,12A,16X,11A,16X,11A
         2690 RETURN

         2700 REM ************ END OF SUBROUTINE 2 ******************************

+++2+++  2710 END

         2720 REM
         2730 REM ************ L$ ARRAY (60) ***********************************

         2740 DATA "RESIDUE AREA   SPRAY DRYER    ELEC. PRECIP.  TOTAL          "

         2750 REM
```

```
2760 REM ************ W$ ARRAY (36) ************************************

2770 DATA *JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC*

2780 REM
2790 REM ************************ END OF PROGRAM ************************
2800 REM
```

FILE # 5

```
        1 GO TO 100
        4 FIND @U:1
        5 INPUT @U,131Z$
        6 GO TO 450
        8 GO TO 1860

+++1+++ 100 REM ****                  TOTALS - D2                          ****
        110 REM                     VERSION 4 - 5/12/81
        120 REM       THIS PROGRAM PRINTS AN OPERATIONS REPORT OF TOTAL
        130 REM       DRUMS IN THE INVENTORY FOR A SPECIFIED PERIOD OF TIME.
        140 REM       INPUT DATA ARE FROM THE 'DRUM TOTALS' TAPE CREATED BY
        150 REM       THE D1 PROGRAM FOR DATA SHEETS 13, 14, AND 15.
        160 REM
        170 REM                     BY:  STEARNS-ROGER, INC.
        180 REM                          M.E.MARTIN
        190 REM ****                                                       ****

        200 PAGE
        210 INIT
        220 SET KEY
        230 DIM C(4,4),A$(1),L$(60),W$(36),Y$(45),Z$(45)
        240 PRINT "DO YOU WANT TO PRINT DRUM TOTALS? (ENTER Y OR N) "
        250 INPUT A$
        260 IF A$="Y" THEN 290
        270 PRINT "YOU ARE USING THE WRONG TOTALS PROGRAM"
        280 GO TO 1960
+++1+++ 290 READ L$,W$
        300 PRINT "INSERT THE INPUT DATA TAPE (DRUM TOTALS) INTO UNIT 4924"
        310 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  "
        320 INPUT U
        330 FIND @U:1
        340 INPUT @U,131Z$
        350 S$=SEG(Z$,4,2)
        360 T$=SEG(Z$,8,6)
        370 U$=SEG(T$,3,2)
        380 V$=SEG(T$,1,2)
        390 T$=SEG(T$,5,2)
        400 T$=T$&U$
        410 T$=T$&V$
        420 IF S$="51" THEN 450
        430 PRINT "THIS IS THE WRONG INPUT DATA TAPE"
        440 GO TO 1860
+++4+++ 450 PRINT "ENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY)  "
        460 INPUT B$
        470 L6=LEN(B$)
        480 IF L6=6 THEN 510
        490 PRINT "WRONG LENGTH ON BEGINNING DATE - REENTER"
        500 GO TO 450
+++1+++ 510 U$=SEG(B$,3,2)
        520 V$=SEG(B$,1,2)
        530 S$=SEG(B$,5,2)
        540 B$=B$&U$
        550 B$=B$&V$
+++1+++ 560 PRINT "ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY)  "
        570 INPUT C$
        580 L6=LEN(C$)
        590 IF L6=6 THEN 620
        600 PRINT "WRONG LENGTH ON ENDING DATE - REENTER"
```

```
          610 GO TO 560
+++1+++   620 U$=SEG(C$,3,2)
          630 V$=SEG(C$,1,2)
          640 C$=SEG(C$,5,2)
          650 C$=C$&U$
          660 C$=C$&V$
          670 IF B$<=C$ THEN 710
          680 PRINT "ENDING DATE MUST BE LATER THAN BEGINNING DATE"
          690 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "!
          700 GO TO 1790
+++1+++   710 IF C$<T$ THEN 1310

          720 REM
          730 REM ************ PROCESS INPUT DATA TOTALS ***************************

          740 E$=B$
          750 F1=0
+++2+++   760 INPUT @0,6:L
          770 IF L=1 THEN 940
          780 INPUT @0,13:Z$
          790 I$=SEG(Z$,8,6)
          800 U$=SEG(I$,3,2)
          810 V$=SEG(I$,1,2)
          820 I$=SEG(I$,5,2)
          830 I$=I$&U$
          840 I$=I$&V$
          850 IF I$<E$ THEN 760
          860 IF F1=1 THEN 960
          870 S$=SEG(Z$,14,32)
          880 F1=1
          890 E$=C$
          900 IF B$<>C$ THEN 760
          910 IF I$<>B$ THEN 1310
          920 T$=S$
          930 GO TO 970
+++1+++   940 IF F1=0 THEN 1310
          950 I$=C$
+++1+++   960 T$=SEG(Z$,14,32)
+++1+++   970 R$=S$
          980 FOR J=1 TO 3 STEP 2
          990  K1=1
         1000  K2=13
         1010  FOR I=1 TO 4
         1020   E$=SEG(R$,K1,3)
         1030   F$=SEG(R$,K2,5)
         1040   C(I,J)=VAL(E$)
         1050   C(I,J+1)=VAL(F$)
         1060   K1=K1+3
         1070   K2=K2+5
         1080  NEXT I

         1090  REM ** BEGIN  DATE:  C(I,1) IS DAILY TOTAL;  C(I,2) IS ACCUM. TOTAL
         1100  REM ** END   DATE:  C(I,3) IS DAILY TOTAL;  C(I,4) IS ACCUM. TOTAL

         1110  IF R$=C$ THEN 1270
         1120  R$=T$
         1130 NEXT J

         1140 REM
         1150 REM ************ TOTALS FOR MORE THAN ONE DAY *********************
```

```
        1160 FOR I=1 TO 4
        1170  C(I,2)=C(I,2)-C(I,1)
        1180  IF I$=C$ THEN 1200
        1190  C(I,4)=C(I,4)-C(I,3)
+++1+++ 1200  C(I,1)=C(I,4)-C(I,2)
        1210 NEXT I
        1220 GO TO 1360

        1230 REM
        1240 REM ***  C(I,1) IS TOTAL FOR PERIOD;  C(I,4) IS ACCUMULATIVE TOTAL
        1250 REM
        1260 REM ************ TOTALS FOR ONLY ONE DAY ***************************

+++1+++ 1270 FOR I=1 TO 4
        1280  C(I,4)=C(I,2)
        1290 NEXT I
        1300 GO TO 1360
+++3+++ 1310 PRINT "␣PROGRAM IS UNABLE TO FIND DATE"
        1320 PRINT "␣DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "$
        1330 GO TO 1790

        1340 REM
        1350 REM ************ PROCESS REPORT DATES ******************************

+++2+++ 1360 P$=B$
        1370 GOSUB 2440
        1380 X$=D$
        1390 P$=C$
        1400 GOSUB 2440
        1410 Y$=D$

        1420 REM
        1430 REM ************ PRINT REPORT *************************************

        1440 A=41
+++1+++ 1450 GOSUB 1900
        1460 K1=1
        1470 FOR I=1 TO 4
        1480  E$=SEG(L$,K1,15)
        1490  FOR J=1 TO 4 STEP 3
        1500   R$=STR(C(I,J))
        1510   R=LEN(R$)
        1520   IF R=5 THEN 1590
        1530   IF R>5 THEN 1580
        1540   FOR K=R+1 TO 5
        1550    R$=" "&R$
        1560   NEXT K
        1570   GO TO 1590
+++1+++ 1580   R$=SEG(R$,R-4,5)
+++2+++ 1590   IF J=4 THEN 1620
        1600   F$=R$
        1610  NEXT J
+++1+++ 1620  PRINT @A: USING "9X,15A,5A,11X,15A,5A"IE$,F$,E$,R$
        1630  K1=K1+15
        1640 NEXT I
        1650 GOSUB 2140
        1660 IF A=32 THEN 1740
        1670 PRINT "␣DO YOU WANT A HARD COPY?  (ENTER Y OR N)  "$
        1680 INPUT A$
```

```
         1690 IF A$<>"Y" THEN 1780
         1700 PAGE
         1710 MOVE 0,100
         1720 A=32
         1730 GO TO 1450
+++1+++  1740 PRINT @A,26:3
         1750 MOVE 0,0
         1760 PRINT
         1770 PRINT @A,26:0
+++1+++  1780 PRINT "DO YOU WANT TO PRINT ANOTHER REPORT?  (ENTER Y OR N) ";
+++2+++  1790 INPUT A$
         1800 IF A$<>"Y" THEN 1840
         1810 FIND @U:1
         1820 INPUT @U,13:Z$
         1830 GO TO 450
+++1+++  1840 PRINT "NORMAL END OF PROGRAM"
         1850 GO TO 2570
+++3+++  1860 PRINT "***** ABNORMAL END OF PROGRAM *****"
         1870 GO TO 2570

         1880 REM
         1890 REM ************* SUBROUTINE 1 - PRINT PAGE HEADING *****************

-------------------------------------------------------------------------------

---1---  1900 IF A=32 THEN 1980
         1910 PRINT @A:"L"
         1920 PRINT @A; USING "8A":"DRXTH-SE"
         1930 PRINT @A:"JJ"
         1940 PRINT @A; USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
         1950 PRINT @A; USING "8A":"USATHAMA"
         1960 PRINT @A:"J"
         1970 GO TO 2010
+++1+++  1980 PRINT @A; USING "39A,S":"MEMORANDUM FOR COLONEL JOHN D. SPENCE, "
         1990 PRINT @A; USING "8A,12X,8A":"USATHAMA","DRXTH-SE"
         2000 PRINT @A;
+++1+++  2010 PRINT @A; USING "35A":"SUBJECT:  ID SETS OPERATIONS REPORT"
         2020 PRINT @A;
         2030 PRINT @A; USING "14A,5X,9A,3A,9A":"REPORT PERIOD:",X$," - ",Y$
         2040 PRINT @A;
         2050 PRINT @A; USING "9X,28A,S":"--------TYPES AND TOTALS OF "
         2060 PRINT @A; USING "23A":"DRUMS PROCESSED--------"
         2070 PRINT @A; USING "9X,20A,11X,S":"-------PERIOD-------"
         2080 PRINT @A; USING "20A":"---SINCE STARTUP----"
         2090 PRINT @A;
         2100 RETURN

         2110 REM ************* END OF SUBROUTINE 1 ******************************
         2120 REM
         2130 REM ************* SUBROUTINE 2 - PRINT END OF PAGE *****************

-------------------------------------------------------------------------------

---1---  2140 N$="_____"
         2150 M$="_____"
         2160 PRINT @A;
         2170 IF A=32 THEN 2200
         2180 N=3
         2190 GO TO 2210
+++1+++  2200 N=2
```

```
+++1+++  2210 PRINT @A;"OPERATIONAL REMARKS:"
         2220 PRINT @A;
         2230 PRINT @A; USING "2X,25A,S";"1.  PROBLEMS/SOLUTIONS:"
         2240 PRINT @A; USING "30A,15A";N$,M$
         2250 FOR I=1 TO 3
         2260  PRINT @A;
         2270  PRINT @A; USING 2280;N$,N$,"__________"
         2280  IMAGE 2X,30A,30A,10A
         2290 NEXT I
         2300 PRINT @A;
         2310 PRINT @A; USING "2X,37A,S";"2.  EXPOSURES/EMISSIONS/EXPLOSIONS:"
         2320 PRINT @A; USING "30A,3A";N$,"___"
         2330 FOR I=1 TO N
         2340  PRINT @A;
         2350  PRINT @A; USING 2280;N$,N$,"__________"
         2360 NEXT I
         2370 PRINT @A;"JJJ"
         2380 PRINT @A; USING "2X,15A,1A,12X,15A,12X,15A";M$,"_",M$,M$
         2390 PRINT @A; USING 2400;"SUBMITTED BY","REVIEWED BY","APPROVED BY"
         2400 IMAGE 4X,12A,16X,11A,16X,11A
         2410 RETURN

         2420 REM ************ END OF SUBROUTINE 2 ********************************
         2430 REM

-------------------------------------------------------------------------------------
---2---   2440 REM ************ SUBROUTINE 3 - CONVERT DATE **********************

         2450 E$=SEG(P$,5,2)
         2460 F$=SEG(P$,3,2)
         2470 H$=SEG(P$,1,2)
         2480 F=VAL(F$)
         2490 F=3*F-2
         2500 F$=SEG(W$,F,3)
         2510 D$="   "
         2520 D$=REP(E$,1,2)
         2530 D$=REP(F$,4,3)
         2540 D$=REP(H$,8,2)
         2550 RETURN

         2560 REM ************ END OF SUBROUTINE 3 ********************************
+++2+++  2570 END

         2580 REM
         2590 REM ************ L$ ARRAY (60) ************************************

         2600 DATA "RESIDUE AREA   SPRAY DRYER    ELEC. PRECIP.  TOTAL"

         2610 REM
         2620 REM ************ W$ ARRAY (36) ************************************

         2630 DATA "JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC"

         2640 REM
         2650 REM ************************ END OF PROGRAM ************************
```

```
        1 GO TO 100
        4 GO TO 690
        8 GO TO 690

+++1+++  100 REM ****                    TOTALS - T1                              ****
         110 REM                        VERSION 4 - 5/20/81
         120 REM       THIS PROGRAM KEEPS A RECORD OF ALL DOWNTIME DATA
         130 REM       ON A 'DOWNTIME TOTALS' TAPE.  THIS TAPE WILL BE
         140 REM       UPDATED DAILY.
         150 REM
         160 REM                          BY:  STEARNS-ROGER, INC.
         170 REM ****                          M.E.MARTIN                        ****

         180 PAGE
         190 INIT
         200 SET KEY
         210 DIM A$(1),X$(97),Z$(101)
         220 PRINT "DO YOU WANT TO UPDATE DOWNTIME TOTALS? (ENTER Y OR N) "
         230 INPUT A$
         240 IF A$="Y" THEN 270
         250 PRINT "YOU ARE USING THE WRONG PROGRAM"
         260 GO TO 690
+++1+++  270 G$="RMA52  "
         280 PRINT "INSERT THE DOWNTIME DATA TAPE INTO THE CONSOLE"
         290 PRINT "ENTER THE FIRST 3 LETTERS OF THE DAY OF THE WEEK:   "
         300 INPUT T$
         310 T$=SEG(T$,1,3)
         320 FIND 1
         330 INPUT @33:Z$
         340 S$=SEG(Z$,4,2)
         350 B$=SEG(Z$,8,3)
         360 C$=SEG(Z$,8,9)
         370 IF S$="16" AND B$=T$ THEN 430
         380 PRINT "THIS IS THE WRONG INPUT DATA TAPE"
         390 PRINT "THIS TAPE IS FOR DATA SHEET #"S$" FOR "C$
         400 GO TO 690

         410 REM
         420 REM ************ PREPARE OUTPUT TAPE ******************************

+++1+++  430 PRINT "INSERT OUTPUT DATA TAPE (DOWNTIME TOTALS) INTO UNIT 4924"
         440 PRINT "ENTER THE UNIT NUMBER YOU ARE USING FOR THE OUTPUT TAPE:  "
         450 INPUT U
         460 PRINT "DO YOU NEED TO INITIALIZE THIS TAPE?  (ENTER Y OR N)  "
         470 INPUT A$
         480 FIND @U:1
         490 IF A$<>"Y" THEN 580
         510 MARK @U:1,300000
         520 FIND @U:1
         530 GO TO 600
+++1+++  540 INPUT @U,4:F
         550 IF F=1 THEN 600
+++1+++  570 INPUT @U+13:X$
         580 GO TO 540

         590 REM
         600 REM ************ ADD NEW DOWNTIME RECORDS TO OUTPUT TAPE **********
```

```
+++3+++   600 IF TYP(0)=1 THEN 660
          610 INPUT @33;Z$
          620 Z$=REP(" ",1,11)
          630 X$=G$&Z$
          640 PRINT @0,12:X$
          650 GO TO 600
+++1+++   660 PRINT "JNORMAL END OF PROGRAM"
          670 PRINT @0,2;
          680 GO TO 700
+++4+++   690 PRINT "J**** ABNORMAL END OF PROGRAM ****"
+++1+++   700 END

          710 REM ************************* END OF PROGRAM *************************
```

FILE # 7

```
1 GO TO 100
4 FIND @U:1
5 INPUT @U,13:Z$
6 GO TO 590
8 GO TO 2990

+++1+++ 100 REM ****                    TOTALS - T2                    ****
        110 REM                       VERSION 5 - 2/4/82
        120 REM       THIS PROGRAM PRINTS VARIOUS REPORTS OF DOWNTIME
        130 REM       DATA ACCUMULATED OVER ANY PERIOD OF TIME.
        140 REM       INPUT DATA ARE FROM THE 'DOWNTIME TOTALS' TAPE
        150 REM       CREATED BY THE T1 PROGRAM.
        160 REM
        170 REM                    BY:  STEARNS-ROGER, INC.
        180 REM ****                    M.E.MARTIN                     ****

        190 PAGE
        200 INIT
        210 SET KEY
        220 DIM M(26,2),M$(370),N(99,2),N$(840),H(500),S(500)
        230 DIM A$(1),W$(36),X$(9),Y$(97),Z$(97)
        240 PRINT "JDO YOU WANT TO PRINT DOWNTIME REPORTS ? (ENTER Y OR N) ";
        250 INPUT A$
        260 IF A$="Y" THEN 290
        270 PRINT "JYOU ARE USING THE WRONG TOTALS PROGRAM"
        280 GO TO 2990
+++1+++ 290 READ M
        300 READ M$
        310 FOR I=1 TO 6
        320  READ Y$
        330  M$=M$&Y$
        340 NEXT I
        350 DELETE Y$
        360 READ N
        370 READ N$
        380 FOR I=1 TO 15
        390  READ Y$
        400  N$=N$&Y$
        410 NEXT I
        420 DELETE Y$
        430 READ W$
        440 PRINT "JINSERT THE INPUT DATA TAPE (DOWNTIME TOTALS) INTO UNIT 4924"
        450 PRINT "JENTER THE UNIT NUMBER YOU ARE USING FOR THE DATA TAPE  ";
        460 INPUT U
        470 FIND @U:1
        480 INPUT @U,13:Z$
        490 S$=SEG(Z$,4,2)
        500 T$=SEG(Z$,3,6)
        510 Q$=SEG(T$,1,2)
        520 U$=SEG(T$,3,2)
        530 T$=SEG(T$,5,2)
        540 T$=T$&U$
        550 T$=T$&Q$
        560 IF S$="52" THEN 590
        570 PRINT "JTHIS IS THE WRONG INPUT DATA TAPE"
        580 GO TO 2990
+++4+++ 590 PRINT "JENTER THE BEGINNING DATE OF THE REPORT PERIOD (DDMMYY):  ";
```

```
          610 L6=LEN(B$)
          620 IF L6=6 THEN 650
          630 PRINT "WRONG LENGTH ON BEGINNING DATE - REENTER"
          640 GO TO 590
+++1+++   650 V$=SEG(B$,1,2)
          660 U$=SEG(B$,3,2)
          670 B$=SEG(B$,5,2)
          680 B$=B$&U$
          690 B$=B$&V$
+++1+++   700 PRINT "ENTER THE ENDING DATE OF THE REPORT PERIOD (DDMMYY):  "
          710 INPUT C$
          720 L6=LEN(C$)
          730 IF L6=6 THEN 760
          740 PRINT "WRONG LENGTH ON ENDING DATE - REENTER"
          750 GO TO 700
+++1+++   760 V$=SEG(C$,1,2)
          770 U$=SEG(C$,3,2)
          780 C$=SEG(C$,5,2)
          790 C$=C$&U$
          800 C$=C$&V$
          810 IF B$<=C$ THEN 850
          820 PRINT "ENDING DATE MUST BE LATER THAN BEGINNING DATE"
          830 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "
          840 GO TO 2890
+++1+++   850 IF C$>=T$ THEN 910
+++3+++   860 PRINT "PROGRAM IS UNABLE TO FIND DATE"
          870 PRINT "DO YOU WANT TO TRY AGAIN?  (ENTER Y OR N)  "
          880 GO TO 2890

          890 REM
          900 REM ************ REPORT DIRECTORY ***********************************

+++2+++   910 PAGE
          920 PRINT "       DIRECTORY FOR DOWNTIME REPORTS"
          930 PRINT "JJ  KEY   PROGRAM"
          940 PRINT "  ---   --------"
          950 PRINT "J    1    ALL DOWNTIME LISTED BY SUBSYSTEM"
          960 PRINT "J    2    CHARGEABLE DOWNTIME LISTED BY SUBSYSTEM"
          970 PRINT "J    3    NON-CHARGEABLE DOWNTIME LISTED BY SUBSYSTEM"
          980 PRINT "J    4    ALL DOWNTIME TOTALLED BY SUBSYSTEM"
          990 PRINT "J    5    DOWNTIME LISTED BY PRIMARY COMPONENT"

          1000 REM

          1010 PRINT "JJJ   ENTER KEY FROM THE ABOVE LIST:   "
+++1+++   1020 INPUT K
          1030 IF K<6 THEN 1080
          1040 PRINT "INVALID KEY NUMBER - REENTER:   "
          1050 GO TO 1020

          1060 REM
          1070 REM ************ PROCESS REPORT DATES ********************************

+++1+++   1080 F$=B$
          1090 GOSUB 1260
          1100 X$=D$
          1110 F$=C$
          1120 GOSUB 1260
          1130 Y$=D$
          1140 J=0
```

```
          1150 T=0
          1160 J$="SUBSYSTEM          "
          1170 GO TO K OF 1180,1200,1220,1710,2010
+++1+++   1180 H$="ALL"
          1190 GO TO 1390
+++1+++   1200 H$="CHARGEABLE"
          1210 GO TO 1390
+++1+++   1220 H$="NON-CHARGEABLE"
          1230 GO TO 1390

          1240 REM
          1250 REM **** SUBROUTINE 1 - SET UP PRINT DATE
-----------------------------------------------------------------------------

---2---   1260 E$=SEG(P$,5,2)
          1270 F$=SEG(P$,3,2)
          1280 G$=SEG(P$,1,2)
          1290 F=VAL(F$)
          1300 F=3*F-2
          1310 F$=SEG(W$,F,3)
          1320 D$="           "
          1330 D$=REP(E$,1,2)
          1340 D$=REP(F$,4,3)
          1350 D$=REP(G$,8,2)
          1360 RETURN

          1370 REM
          1380 REM ************ PREPARE REPORTS 1, 2, AND 3 **********************

+++4+++   1390 V$=SEG(Z$,8,2)
          1400 U$=SEG(Z$,10,2)
          1410 I$=SEG(Z$,12,2)
          1420 I$=I$&U$
          1430 I$=I$&V$
          1440 IF I$<D$ THEN 1620
          1450 IF I$>C$ THEN 1660
          1460 K$=SEG(Z$,35,2)
          1470 GO TO K OF 1520,1480,1500
+++1+++   1480 IF K$<>"05" THEN 1520
          1490 GO TO 1620
+++1+++   1500 IF K$="05" THEN 1520
          1510 GO TO 1620
+++3+++   1520 K$=SEG(Z$,37,4)
          1530 K=VAL(K$)/100
          1540 IF K=0 THEN 1620
          1550 J=J+1
          1560 IF J>500 THEN 1680
          1570 H(J)=K
          1580 T=T+K
          1590 K$=SEG(Z$,23,2)
          1600 K=VAL(K$)
          1610 S(J)=K
+++4+++   1620 INPUT #0,Z$
          1630 IF Z$=1 THEN 1660
          1640 INPUT #0,Z$,Z$
          1650 GO TO 1590
+++2+++   1660 IF J=0 THEN 860
          1670 GO TO 2250
+++2+++   1680 PRINT "THIS PROGRAM CANNOT HANDLE MORE THAN 500 RECORDS"
```

```
          1690 GO TO 2990

          1700 REM ************ PREPARE REPORT #4 ********************************

+++1+++   1710 FOR I=1 TO 26
          1720  S(I)=I
          1730  H(I)=0
          1740 NEXT I
          1750 S(26)=99
+++1+++   1760 V$=SEG(Z$,8,2)
          1770 U$=SEG(Z$,10,2)
          1780 I$=SEG(Z$,12,2)
          1790 I$=I$&U$
          1800 I$=I$&V$
          1810 IF I$<B$ THEN 1930
          1820 IF I$>C$ THEN 1970
          1830 R$=SEG(Z$,37,4)
          1840 R=VAL(R$)/100
          1850 IF R=0 THEN 1930
          1860 J=J+1
          1870 R$=SEG(Z$,23,2)
          1880 I=VAL(R$)
          1890 IF I<>99 THEN 1910
          1900 I=26
+++1+++   1910 H(I)=H(I)+R
          1920 T=T+R
+++2+++   1930 INPUT @U,6:L
          1940 IF L=1 THEN 1970
          1950 INPUT @U,13:Z$
          1960 GO TO 1760
+++2+++   1970 IF J=0 THEN 860
          1980 J=26
          1990 GO TO 2250

          2000 REM ************ PREPARE REPORT #5 ********************************

+++1+++   2010 J$=" PRIMARY COMPONENT"
+++1+++   2020 V$=SEG(Z$,8,2)
          2030 U$=SEG(Z$,10,2)
          2040 I$=SEG(Z$,12,2)
          2050 I$=I$&U$
          2060 I$=I$&V$
          2070 IF I$<B$ THEN 2190
          2080 IF I$>C$ THEN 2230
          2090 R$=SEG(Z$,37,4)
          2100 R=VAL(R$)/100
          2110 IF R=0 THEN 2190
          2120 J=J+1
          2130 IF J>500 THEN 1680
          2140 H(J)=R
          2150 T=T+R
          2160 R$=SEG(Z$,25,2)
          2170 R=VAL(R$)
          2180 S(J)=R
+++2+++   2190 INPUT @U,6:L
          2200 IF L=1 THEN 2230
          2210 INPUT @U,13:Z$
          2220 GO TO 2020
+++2+++   2230 IF J=0 THEN 860
```

```
          2240 REM ************ PRINT REPORT ************************************
+++2+++   2250 A=41
          2260 J3=57
+++1+++   2270 PRINT @A:"L     SUBJECT:  DOWNTIME REPORT NUMBER "|K
          2280 GO TO K OF 2290,2290,2290,2310,2330
+++3+++   2290 PRINT @A:"                 "|H$|" DOWNTIME LISTED BY SUBSYSTEM"
          2300 GO TO 2340
+++1+++   2310 PRINT @A:"                   ALL DOWNTIME TOTALLED BY SUBSYSTEM"
          2320 GO TO 2340
+++1+++   2330 PRINT @A:"                   LISTED BY PRIMARY COMPONENT"
+++2+++   2340 PRINT @A:"J     REPORT PERIOD:  "|X$|" - "|Y$
          2350 K$=SEG(J$,1,9)
          2360 PRINT @A:
          2370 PRINT @A: USING "10X,9A,18X,5A,7X,7A"|K$,"HOURS","PERCENT"
          2380 K$=SEG(J$,10,9)
          2390 PRINT @A: USING "10X,9A,16X,8A,5X,8A"|K$,"DOWNTIME","DOWNTIME"
          2400 PRINT @A:
          2410 J1=1
          2420 J2=J3-8
+++1+++   2430 IF J2<J THEN 2450
          2440 J2=J
+++1+++   2450 FOR I=J1 TO J2
          2460  P=100*H(I)/T
          2470  S1=S(I)
          2480  IF K=5 THEN 2520
          2490  IF S1<>99 THEN 2540
          2500  S1=26
          2510  GO TO 2540
+++1+++   2520  R$=SEG(N$,N(S1,1),N(S1,2))
          2530  GO TO 2550
+++2+++   2540  R$=SEG(M$,M(S1,1),M(S1,2))
+++1+++   2550  R1=LEN(R$)
          2560  FOR I1=R1+1 TO 20
          2570   R$=R$|" "
          2580  NEXT I1
          2590  PRINT @A: USING "6X,2D,2X,21A,3X,5D.2D,8X,3D"|S(I),R$,H(I),P
          2600 NEXT I
          2610 IF J2<>J THEN 2660
          2620 PRINT @A:
          2630 PRINT @A: USING "10X,20A,4X,5D.2D"|"TOTAL HOURS DOWNTIME",T
          2640 IF A=41 THEN 2770
          2650 GO TO 2840
+++1+++   2660 IF A=41 THEN 2710
          2670 PRINT @A,26:3
          2680 MOVE 0,0
          2690 PRINT
          2700 PRINT @A,26:0
+++1+++   2710 J1=J2+1
          2720 J2=J2+J3
          2730 PRINT @A:"L"
          2740 GO TO 2430

          2750 REM
          2760 REM ************ END OF REPORT ************************************

+++1+++   2770 PRINT "DO YOU WANT A HARD COPY?  (ENTER Y OR N)  "|
          2780 INPUT A$
          2790 IF A$<>"Y" THEN 2800
          2800 MOVE 0,100
```

```
            2010 A=32
            2020 J3=32
            2030 GO TO 2270
      +++1+++  2040 PRINT @A,2613
            2050 MOVE 0,0
            2060 PRINT
            2070 PRINT @A,2610
      +++1+++  2080 PRINT "JDO YOU WANT TO PRINT ANOTHER REPORT?  (ENTER Y OR N)  "!
      +++2+++  2090 INPUT A$
            2100 IF A$<>"Y" THEN 2970
            2110 FIND @U11
            2120 INPUT @0,13:Z$
            2130 PRINT "JSAME BEGINNING AND ENDING DATES?  (ENTER Y OR N)  "!
            2140 INPUT A$
            2150 IF A$="N" THEN 590
            2160 GO TO 910
      +++1+++  2170 PRINT "JNORMAL END OF PROGRAM"
            2180 GO TO 3000
      +++4+++  2190 PRINT "J**** ABNORMAL END OF PROGRAM ****"
      +++1+++  3000 END

            3010 REM
            3020 REM ************* M ARRAY (26,2) ************************************

            3030 DATA 1,18,20,11,32,13,45,20,66,8,75,13,89,5,94,15,110,4,115,20
            3040 DATA 142,9,151,12,164,13,178,13,192,12,204,15,220,6,227,11
            3050 DATA 239,20,261,9,271,12,284,8,293,16,309,17,327,17,352,14

            3060 REM
            3070 REM ************* M$ ARRAY (370) - SUBSYSTEMS ***********************

            3080 DATA "POWER DISTRIBUTION-SERVICE AIR-POTABLE WATER"
            3090 DATA "STEAM AND CONDENSATE-FUEL OIL-PROCESS WASTE-DOORS"
            3100 DATA "FIRE PROTECTION-HVAC-ELECTROSTATIC PRECIP-------SCRUBBERS"
            3110 DATA "CONTROL ROOM-DEACT FURNACE-DECON FURNACE-AFTER BURNER"
            3120 DATA "EMERGENCY POWER-QUENCH-SPRAY DRYER-RECEIVING & HANDLING--"
            3130 DATA "GLOVE BOX-DECON MODULE-BOX FEED-RESIDUE HANDLING"
            3140 DATA "SET MOVEMENT(TSY)-ENVIRO MONITORING--------ADMINISTRATIVE"

            3150 REM
            3160 REM ************* N ARRAY (99,2) ************************************

            3170 DATA 1,15,17,5,23,4,28,5,34,4,39,4,44,5,50,5,55,8,64,7,72,8
            3180 DATA 81,14,96,5,102,7,109,4,114,15,130,6,137,6,144,6,151,10
            3190 DATA 161,12,174,6,181,10,192,19,211,19,231,19,251,5,257,4
            3200 DATA 261,11,273,10,284,8,293,4,298,6,305,8,313,11,325,12,338,4
            3210 DATA 343,5,349,4,354,6,361,4,365,4,370,5,376,5,382,10,393,14
            3220 DATA 408,6,415,6,421,5,427,6,434,4,439,4,444,6,451,4,456,4
            3230 DATA 461,6,468,6,474,8,483,20,507,7,515,6,522,3
            3240 DATA 525,8,534,6,541,9,551,6,558,10,569,5,574,20,596,13
            3250 DATA 610,10,621,8,629,15,645,1,647,5,653,8,662,14,677,5
            3260 DATA 682,7,690,7,698,20,719,8,728,3,731,5,737,5,743,7,751,8,760,6
            3270 DATA 767,4,772,6,779,5,784,4,789,5,795,3,799,7,807,9,817,6
            3280 DATA 824,4,829,5

            3290 REM
            3300 REM ************* N$ ARRAY (840) ************************************

            3310 DATA "ACTUATOR,FEELER-MOTOR-PUMP-VALVE-BELT-SEAL-SHAFT-CHAIN"
            3320 DATA "SPROCKET-BEARING-CYLINDER-VALVE,SOLENOID-RELAY-CONTACT"
```

```
3330 DATA "FUSE-CIRCUIT BREAKER-WIRING-SWITCH-CAMERA-CONTROLLER"
3340 DATA "PAN AND TILT-DAMPER-POSITIONER-AIR HANDLING UNIT 1"
3350 DATA "AIR HANDLING UNIT 2-AIR HANDLING UNIT 3-TIMER-HOSE"
3360 DATA "TRANSMITTER-SPRAY TREE-CONVEYOR-GEAR-WINDOW-HOT SHOE"
3370 DATA "INSIDE CART-OUTSIDE CART-DOOR-GAUGE-TANK-HOPPER-TRAY"
3380 DATA "RACK-HOIST-CABLE-BLOCK/HOOK-LIFTING DEVICE-PALLET-BURNER"
3390 DATA "PILOT-FIREYE-SUMP-PIPE-BOILER-COIL-TRAP-HEATER-FILTER"
3400 DATA "STRAINER-THERMOSTAT/THERMOCPL----LINKAGE-BLOWER-FAN"
3410 DATA "OVERPACK-GLOVES SPHINCTER-WRENCH-COMPRESSOR-DRYER"
3420 DATA "HEAT EXCHANGE/COOLER--CONTROL PANEL-TV MONITOR-CART TOP"
3430 DATA "CIRCUIT BREAKER- -LIGHT-MIRAN 80-BUBBLER/FILTER-TABLE"
3440 DATA "PIG SET-BOX SET-CONNECTOR/ATTACHMENT-LINK/TAB-PIN"
3450 DATA "ALARM-STAGE-STATION-VIBRATOR-RAPPER-GRID-SAMPLE-WHEEL"
3460 DATA "BAND-STACK-SKI-BATTERY-REGULATOR-BRIDGE-IRIS-OTHER"

3470 REM
3480 REM ********** M$ ARRAY (36) ************************************

3490 DATA "JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC"

3500 REM
3510 REM ************************ END OF PROGRAM ************************
```

APPENDIX C

APPENDIX C
OPERATION OF THE STATISTICAL PROGRAMS

The ID Sets statistical programs are designed to analyze plant air monitoring data, lab quality control data and check the calibration of the lab analyst's machines. There is a separate statistical program and corresponding history tape for each type of agent destroyed. These programs were written for the Tektronix 4051 and 4052 micro-computers along with the 4924 external tape drive, the 4631 hard copy unit and the 4662 plotter. Refer to the glossary of Tektronix hardware terms found in Appendix A.

The computer operator starts by inserting the program tape into the internal tape drive of the 4051 or 4052 computer, and presses the "AUTO LOAD" key. This automatically loads the first program file on the statistics program tape into memory and then executes the program. The directory in Figure C-1 appears on the screen and the computer awaits the operator's choice. Option one creates a new IDS history tape. This tape, when new, contains only information concerning quality control boundaries. After it has been used in conjunction with the statistics program, it will hold the previous day's quality control results (a month at a time) along with the daily lab data. After the tape has been created the program returns to the directory in Figure C-1.

Option two is a program that is used to refresh the history tape and its files between each daily run. It removes the files that contain the daily lab data and leaves intact the files containing the previous day's quality control results. After this option is entered, the instructions in Figure C-2 are displayed. The "HOME PAGE" key is located on the upper left-hand corner of the keyboard. When completed, the program returns to the directory shown in Figure C-1.

When option three is entered the computer screen clears and the message in Figure C-3 appears.

After the user, user-ID and date have been entered the operator must follow the instructions in Figure C-4.

After a brief period of time the message in Figure C-5 appears. The statistics program tape must be removed before this can be done.

The programs for some of the other agents destroyed request additional information concerning lab analyst's initials and the machine number used for the analysis. At this time the daily data tape is read and the data is stored on the IDS history tape. After this process is completed a small flashing "F" is seen in the upper left-hand corner of the CRT screen. This indicates that the "HOME PAGE" key must be pressed. The screen will flash and the actual data (plant air monitoring results) for the day are displayed. After a hard copy is made the "HOME PAGE" key must be pressed to continue. The message in Figure C-6 follows.

Next the statistics program produces a calibration graph based on some of the daily data from the history tape. After a hard copy is produced the "HOME PAGE" key is pressed. The message in Figure C-7 is displayed. At this time the computer operator has a chance to reproduce the same graph but on a larger scale than the hard copy

unit. If the answer is no, the program then calculates the accuracy and precision values for the day. The accuracy and precision results for the day are used to update the monthly history file. From this history file a graph of the month's accuracy values is displayed on the screen. A hard copy is made and the "HOME PAGE" key is pressed to continue. The operator has the choice presented in Figure C-7. Next the graph which shows lab precision values for the month is drawn on the screen. A hard copy is made, the "HOME PAGE" key is pressed and the message in Figure C-7 is again displayed. For some of the agents demilitarized, this is the last graph. For others two more graphs similar to the lab accuracy and precision graphs are produced. The only difference is that they show plant quality control instead of lab quality control. The same procedures are followed for these graphs. When the statistics program is completed the directory in Figure C-1 is displayed and option 4 is chosen.

```
S T A T I S T I C S   P R O G R A M   D I R E C T O R Y

OPTION          FUNCTION
------          --------

   1        CREATE A NEW HISTORY TAPE
   2        REFRESH HISTORY TAPE
   3        RUN STATISTICS PROGRAMS
   4        STOP


WHICH OPTION>  (1,2,3,4)
```

FIGURE C-1

```
BEGIN PROGRAM TO UPDATE HISTORY TAPE
INSERT HISTORY TAPE INTO INTERNAL TAPE DRIVE
MAKE SURE WRITE PROTECT IS NOT ON SAFE
PRESS HOME PAGE TO START PROGRAM
```

FIGURE C-2

```
ID SETS MANAGEMENT

Programmed by
Computer Sciences Corporation
Data Systems Laboratory
NATIONAL SPACE TECHNOLOGY LABORATORY
NSTL Station, Mississippi 39529

Version 7.8
FEBRUARY 18,1981

PRESS 'RETURN' TO CONTINUE
ENTER USER-ID

ENTER DATE  MM/DD/YY
```

FIGURE C-3

```
INSERT IDS HISTORY TAPE IN EXTERNAL TAPE UNIT # 4924

*** ENTER EXTERNAL LABEL ON HISTORY TAPE
```

FIGURE C-4

```
INSERT RMA TAPE IN 4051
ENTER THE LABEL ON THE RMA DATA TAPE
```

FIGURE C-5

```
INSERT PROGRAM TAPE IN 4051
PRESS 'HOME PAGE' TO CONTINUE
```

FIGURE C-6

```
DO YOU WANT A 4662 PLOT? (Y/N)
```

FIGURE C-7

APPENDIX D

APPENDIX D

LISTING OF THE STATISTICAL PROGRAMS

FILE # 1

```
++++++  100 INIT
        110 U3=32
        120 PRINT @U3,26:0
        130 PAGE
        140 PRINT "JJ"
        150 PRI "       S T A T I S T I C S   P R O G R A M   D I R E C T O R Y"
        160 PRI "       - - - - - - - - - -   - - - - - - - - - - - - - - - - -"
        170 PRINT "JJOPTION                          FUNCTION"
        180 PRINT "------                          --------"
        190 PRINT "J     1       CREATE A NEW HISTORY TAPE"
        200 PRINT "      2       SCRATCH HISTORY TAPE"
        210 PRINT "      3       RUN STATISTICS PROGRAMS"
        220 PRINT "      4       STOP"
        230 PRINT "JJJJ     WHICH OPTION>  (1,2,3,4)"
++++++  240 INPUT A$
        250 IF A$="" THEN 240
        260 A=VAL(A$)
        270 IF A<1 OR A>4 THEN 100
        280 A=INT(A)
        290 GO TO A OF 300,400,500,600
++++++  300 FIND 0
        310 FIND 5
        320 DELB
++++++  400 FIND 0
        410 FIND 7
        420 DELB
++++++  500 FIND 0
        510 FIND 5
        520 DELB
++++++  600 END
```

FILE # 2

```
100 INIT

110 REM MAKE SURE SCREEN DOES NOT AUTOMATICALLY PAGE WHEN FULL

120 PRINT @32,26;0

130 REM ASSIGN DEVICE NUMBERS;FIND FILE 2 OF HISTORY TAPE;SKIP RECORD

140 U1=33
150 U2=11
160 FIND @U2;0
170 FIND @U2;2
180 INPUT @U2;U$,B$
190 DIM Z$(2[illegible]),U$(20),C$(2),F$(10),E$(72),T$(127),B$(127)
200 DIM M$(6),Y$(30),X$(30),R$(2),A$(6),N$(1),S$(1),W$(7)
210 K$="  "
220 DIM X1(32),Y1(32),X2(32),Y2(32),N2(32),G6(32),N0(8),P(34),G7(32)
230 DIM S(8),M6(8),M7(8),M8(8),M9(8),P0(34)
240 DIM T7(40)
250 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
260 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
270 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
280 DATA 2.037,2.035,2.[illegible]33,2.03,2.028,2.027,2.025,2.023,2.022
290 READ T7
300 E$="  "
310 FOR I=1 TO 71
320   E$=E$&" "
330 NEXT I

340 REM*
350 REM*INITIALIZE PLOTFILES
360 REM*

370 F$="PLOTFILES"

380 REM CHECK HISTORY TAPE HEADER AND GET N9

390 GOSUB 60000
400 FIND @U2;N9
410 PRINT @U2;F$
420 PRINT @U2,2;

430 REM* INITIALIZE PLOT FILES

440 F$="PLOTSOC"
450 GOSUB 60000
460 FIND @U2;N9
470 PRINT @U2;F$
480 PRINT @U[illegible];2;
490 PRINT "GGGGGGG"
500 PRINT "INSERT RMA TAPE IN 4051"
510 PRINT "ENTER THE LABEL ON THE RMA DATA TAPE"
520 INPUT Z$
530 FIND @U1;1
540 A=IYP(0)
550 IF A=1 THEN 500
560 INPUT @U1;Y$
570 IF LEN(Z$)<13 THEN 410
```

```
          580 DIM Z$(13),Y$(13)
          590 IF Y$=Z$ THEN 640
          600 PRINT "LABEL ON TAPE IS "|Y$
++++1+++  610 PRINT "WRONG RMA TAPE OR WRONG LABEL GGGGGGGGGGGGGGGGGGGGGGGGGG"
          620 PAGE
          630 GO TO 500
++:1+++   640 INPUT @U1:B$
          650 M$=SEG(B$,18,2)
          660 PRINT "DATA IS BEING PROCESSED"
          670 GOSUB 1000
          675 PRINT "2KJ"
          680 PRINT "GGGGGGGG"
          690 PRINT "INSERT PROGRAM TAPE IN 4051"
          700 PRINT "2KJ"
          710 FIND @U1:3
          720 OLD
-------------------------------------------------------------------------------------------
---1---   1000 DIM M$(2)

          1010 REM M$ is used to hold name of agent

          1020 M$="L "
          1030 PRINT "This Program Processes agent "|M$|" ONLY"
          1040 PRINT "Enter serial number (n)"
          1050 INPUT N$
          1060 PRINT "Enter the analyst's initials (aaa)"
          1070 INPUT V$
++++1+++  1080 PRINT " TRANSFORM OPTIONS FOR CALIBRATION"

          1082 REM  DEFAULT TRANSFORM FOR As

          1084 O0=2
          1086 GO TO 1152
          1090 PRINT "  1  X = ln(X)"
          1100 PRINT "  2  Y = ln(Y)"
          1110 PRINT "  3  no transform"
          1120 PRINT "J ENTER OPTION (1,2,3)"
          1130 INPUT O0
          1140 IF O0<1 OR O0>3 THEN 1080

          1150 REM Process Calibration Data

++++1+++  1152 P=0
          1154 P(3)=O0
          1155 GO TO O0 OF 1156,1158,1170
++++1+++  1156 P(32)=1
          1157 GO TO 1170
++++1+++  1158 P(31)=2

          1160 REM Skip header record

++++2+++  1170 FIND @U1:1
          1180 INPUT @U1:B$

          1190 REM  use N to count records

          1200 N=0

          1210 REM  check for end of file
```

```
+++3+++  1220 A=TYP(0)
         1230 IF A<>2 THEN 1370
         1240 INPUT #U1:B$
         1250 GOSUB 5000
         1260 IF A<>1 THEN 1220
         1265 T$=B$
         1270 X$=SEG(B$,27,7)
         1280 C$=SEG(X$,1,2)
         1290 IF C$="NA" THEN 1220
         1300 N=1+N

         1310 REM Load calibration data into X2 and Y2

         1320 X2(N)=VAL(X$)
         1330 X$=SEG(B$,40,7)
         1340 Y2(N)=VAL(X$)
         1350 GO TO 1220

         1360 REM now load transformed data into X1,Y1

+++1+++  1370 B$=T$
         1380 GO TO OO OF 1400,1500,1600

         1390 REM X=ln(X) transform

+++1+++  1400 FOR I=1 TO N
         1410  Y1(I)=Y2(I)+P(32)
         1460  X1(I)=LOG(X2(I)+P(32))
         1470 NEXT I
         1480 GO TO 1660

         1490 REM  Y=ln(Y)

+++1+++  1500 FOR I=1 TO N
         1510  X1(I)=X2(I)+P(32)
         1560  Y1(I)=LOG(-Y2(I)+P(31))
         1570 NEXT I
         1580 GO TO 1660

         1590 REM no transformation

+++1+++  1600 FOR I=1 TO N
         1610  X1(I)=X2(I)+P(32)
         1620  Y1(I)=Y2(I)+P(31)
         1630 NEXT I

         1640 REM  end of load routine
         1650 REM Process Calibration Data

+++2+++  1660 PRINT "Processing Calibration Data for "$M$
         1690 GOSUB 20000
         1700 GOSUB 30000
         1710 GOSUB 25000
         1720 P(13)=CB
         1730 P(14)=A1
         1740 M1=0
         1750 M2=0
         1760 M3=0
         1770 M4=0
```

```
1780 M5=0
1790 P(0)=N
1800 FOR I=1 TO N
1810  M1=M1+X1(I)
1820  M2=M2+Y1(I)
1830  M3=M3+X1(I)*X1(I)
1840  M4=M4+Y1(I)*Y1(I)
1850  M5=M5+X1(I)*Y1(I)
1860 NEXT I
1870 C=P(0)*M3-M1*M1
1880 P(10)=P(8)/C
1890 P(11)=M1/C
1900 P(12)=M3/C
1910 P(2)=(P(8)*M5-M1*M2)/(P(8)*M3-M1*M1)
1920 P(1)=(M2-P(2)*M1)/P(8)
1930 P(4)=P(1)
1940 P(5)=P(2)
1950 D=0
1960 FOR I=1 TO P(8)
1970  D=D+(Y1(I)-P(1)-P(2)*X1(I))^2
1980 NEXT I
1990 P(23)=1-D/(M4-M2*M2/P(8))
2010 P(6)=D/(P(8)-2)
2020 P(9)=1
2030 P(29)=1
2040 P(27)=P(6)
2050 L$="Calibration of Instrument Response "&V$
2060 L$=L$&" - "
2070 L$=L$&N$
2080 DIM Y$(30)
2090 X$="CONCENTRATION"
2100 Y$="INSTRUMENT RESPONSE"
2110 D$=SEG(B$,14,2)
2120 D$=D$&"/"
2130 W$=SEG(B$,12,2)
2140 D$=D$&W$
2150 D$=D$&"/"
2160 W$=SEG(B$,16,2)
2170 D$=D$&W$
2180 GOSUB 61000
2190 P0=P

2192 REM   GET PARAMETERS FOR T vs F

2194 F$="HR"&M$
2196 GOSUB 60000
2198 INPUT @U2:B$,P
2204 P(31)=0
2206 P(32)=0
2208 P(3)=3

2210 REM Process QL & QP data

2220 GOSUB 16000
2230 Q$="QL"
2240 C=0.208
2245 B7=0.945
2250 GOSUB 7000
2260 GOSUB 3500
2270 GOSUB 3750
```

```
          2275 Q$="OP"
          2280 C=0.280
          2285 Q7=0.93
          2290 GOSUB 7000
          2300 GOSUB 3500
          2310 GOSUB 3750

          2320 REM Input Actual Data

          2330 N=0
          2340 FIND @U1:1
          2350 INPUT @U1:B$
+++3+++   2360 A=TYP(0)
          2370 IF A<>2 THEN 2460
          2380 INPUT @U1:B$
          2390 GOSUB 5000
          2400 IF A<>1 THEN 2360
          2405 T$=B$
          2410 Y$=SEG(B$,118,2)
          2420 IF Y$<>"FL" THEN 2360
          2430 N=1+N
          2440 GOSUB 10000
          2450 GO TO 2360
++++1+++  2460 B$=T$
          2470 RETURN

          2999 REM Determine Groups
-------------------------------------------------------------------------------

---2---   3000 K=0
          3010 N2=0
++++2+++  3020 FOR J1=1 TO N
          3030  IF N2(J1)=0 THEN 3180
          3040 NEXT J1
++++1+++  3050 N7=0
          3060 FOR J=1 TO N
          3070  IF N2(J)=-1 THEN 3090
          3080  N7=N7+1
++++1+++  3090 NEXT J

          3100 REM Determine number in each group

          3110 N0=0
          3120 IF N=0 THEN 3170
          3130 FOR J=1 TO N
          3140  IF N2(J)=-1 THEN 3160
          3150  N0(N2(J))=1+N0(N2(J))
++++1+++  3160 NEXT J
++++1+++  3170 RETURN
++++1+++  3180 IF J1<>N THEN 3210
          3190 N2(N)=-1
          3200 GO TO 3050
++++1+++  3210 K=K+1
          3220 N2(J1)=K
          3230 J2=1
          3240 J3=Y1(J1)
          3250 J4=J3*J3
          3260 FOR J=J1+1 TO N
          3270  IF N2(J)<>0 OR X1(J)<>X1(J1) THEN 3410
```

```
         3280  N2(J)=K
         3290  J2=1+J2
         3300  J3=J3+Y1(J)
         3400  J4=J4+Y1(J)*Y1(J)
+++1+++  3410 NEXT J
         3420 J5=J4-J3*J3/J2
         3430 IF J2<>1 AND J5<>0 THEN 3020
         3440 FOR J=1 TO N
         3450  IF N2(J)<>K THEN 3470
         3460  N2(J)=-1
+++1+++  3470 NEXT J
         3480 K=K-1
         3490 GO TO 3020

         3498 REM     QC
         3499 REM X1(N2(I))    P(25),P(26)
-----------------------------------------------------------------------------
---2---  3500 S1=0
         3510 S2=0
         3520 J=0
         3530 IF N>0 THEN 3580
         3540 P(25)=0
         3550 P(26)=0
         3560 P(28)=0
         3570 GO TO 3660
+++1+++  3580 FOR I=1 TO N
         3590  J=1+J

         3593  REM   ADJUSTMENT FOR CALCULATED RECOVERY

         3595  X1(I)=X1(I)/87
         3600  S1=S1+X1(I)
         3610  S2=S2+X1(I)*X1(I)
         3620 NEXT I
         3630 P(25)=S1/J
         3640 P(28)=J
         3650 P(26)=SQR(S2/J-P(25)*P(25))
+++1+++  3660 RETURN

         3749 REM update PLOTSQC
-----------------------------------------------------------------------------
---2---  3750 F$="PLOTSQC"
         3760 GOSUB 60000
+++1+++  3770 INPUT @U2,6:A
         3780 IF A<>2 THEN 3810
         3790 INPUT @U2:B$
         3800 GO TO 3770
+++1+++  3810 B$=B$&Q$
         3820 B$=B$&",288"
         3830 PRINT @U2:B$
         3860 PRINT @U2:B$
         3870 PRINT @U2:Q$
         3880 PRINT @U2:C,P(25),P(26),P(28)
         3890 PRINT @U2,2:
         3900 RETURN
```

```
         4999 REM check for acceptable record
-------------------------------------------------------------------------------
---3---  5000 A=1
         5010 X$=SEG(B$,6,1)

         5020 REM see if it is data or comment record

         5030 IF X$<>"1" AND X$<>"3" THEN 5130
         5040 X$=SEG(B$,18,2)

         5050 REM check agent code

         5060 IF X$<>M$ THEN 5130
         5070 X$=SEG(B$,20,1)

         5080 REM check serial number

         5090 IF X$<>N$ THEN 5130
         5100 X$=SEG(B$,87,3)

         5110 REM check analyst's initials

         5120 IF X$=V$ THEN 5140
+++3+++  5130 A=0
+++1+++  5140 RETURN

         5999 REM GROUP MOVEMENTS
-------------------------------------------------------------------------------
---1---  6000 N7=0
         6010 M6=0
         6020 M7=0
         6030 M8=0
         6040 M9=0
         6050 FOR I=1 TO N
         6060  IF N2(I)<1 THEN 6130
         6070  N7=1+N7
         6090  M6(N2(I))=M6(N2(I))+X1(I)
         6100  M7(N2(I))=M7(N2(I))+Y1(I)
         6110  M8(N2(I))=M8(N2(I))+X1(I)*X1(I)
         6120  M9(N2(I))=M9(N2(I))+Y1(I)*Y1(I)
+++1+++  6130 NEXT I
         6140 RETURN

         6999 REM Get data for OL & OP
-------------------------------------------------------------------------------
---3---  7000 N=0
         7010 FIND @U1:0
         7020 FIND @U1:1
         7030 INPUT @U1:B$
+++6+++  7040 A=TYP(0)
         7050 IF A<>2 THEN 7410
         7060 INPUT @U1:B$
         7070 GOSUB 5000
         7080 IF A<>1 THEN 7040
```

```
          7090 W$=SEG(B$,118,2)
          7110 IF W$<>D$ THEN 7040

          71 0 REMcheck for control concentration

          7130 Y$=SEG(B$,97,7)
          7140 IF C=0 THEN 7160
          7150 IF VAL(Y$)<>C THEN 7040
+++1+++   7160 Y$=SEG(B$,48,7)
          7170 Y=VAL(Y$)

          7175 REM   Calibrate QC Data

          7180 GO TO 00 OF 7260,7190,7290
+++1+++   7190 Y=LOG(-Y+P0(31))
          7230 X=(Y-P0(1))/P0(2)-P0(32)
          7240 GO TO 7310

          7250 REM case 1

+++1+++   7260 X=EXP((Y-P0(1)+P(31))/P0(2))-P0(32)
          7270 GO TO 7310

          7280 REM case 3   no transform

+++1+++   7290 X=(Y-P0(1)+P(31))/P0(2)-P0(32)

          7300 REM end of case statement based on transformation

+++2+++   7310 W$=SEG(B$,62,7)
          7315 IF W$="NA      " THEN 7040
          7320 X=X*VAL(W$)
          7322 W$=SEG(B$,69,7)
          7325 IF W$="NA      " THEN 7040
          7327 X=X*VAL(W$)/10
          7330 Y$=SEG(B$,97,7)
          7340 Y=VAL(Y$)
          7350 N=1+N
          7360 X1(N)=X
          7370 X2(N)=X
          7380 Y1(N)=Y
          7390 Y2(N)=Y
          7400 GO TO 7040
+++1+++   7410 RETURN

          9998 REM get actual data from B$
          9999 REM Peak Heights
```

```
---1---   10000 Y1=SEG(B$,48,7)
          10010 Y0=VAL(Y$)
          10020 GO TO 00 OF 10120,10040,10150

          10030 REM  case 2     Y=ln(Y)

+++1+++   10040 Y=LOG(-Y0+P0(31))
          10090 X0=(Y0-P0(1))/P0(2)-P0(32)
          10100 GO TO 10170
```

```
          10110 REM  case 1     X=ln(X)

+++1+++   10120 X0=EXP((Y0*P0(31)-P0(1))/P0(2))-P0(32)
          10130 GO TO 10170

          10140 REM  case 3     no transform

+++1+++   10150 X0=(Y0*P0(31)-P0(1))/P0(2)-P0(32)

          10160 REM  end of case statement  on 00

+++2+++   10170 Y0=X0
          10172 X0=(X0-P(1))/P(2)

          10173 REM  ADJUSTMENT FOR CALCULATED RECOVERY

          10175 X0=X0/0.945
          10180 GOSUB 15000
          10190 X$=SEG(B$,62,7)
          10200 U0=VAL(X$)
          10210 X$=SEG(B$,69,7)
          10220 U0=U0*VAL(X$)

          10230 REM Get Time

          10240 X$=SEG(B$,126,2)
          10250 Y$=SEG(B$,122,2)
          10260 X=VAL(X$)
          10270 Y=VAL(Y$)
          10280 Z=X-Y
          10290 X$=SEG(B$,124,2)
          10300 Y$=SEG(B$,120,2)
          10310 X=VAL(X$)
          10320 Y=VAL(Y$)
          10330 Z=(X-Y)*60+Z

          10340 REM  Get Airflow

          10350 Y$=SEG(B$,90,7)
          10360 Y=VAL(Y$)
          10370 X0=X0*U0/(Y*Z)
          10380 L0=L0*U0/(Y*Z)
          10390 U0=U0*U0/(Y*Z)

          10400 REM Print out Actual Data

          10410 T$=B$
          10420 IF INT((N-1)/20)*20<>N-1 THEN 10630
          10430 B$=E$
          10440 B$=REP("Actual Data for ",24,14)
          10450 B$=REP(M$,40,2)
          10460 B$=REP("Date:",52,5)
          10470 B$=REP(D$,58,8)
          10480 PRINT "JJ"
          10490 PRINT "J";B$
          10500 B$=E$
          10510 B$=REP("Agent Concentration",29,19)
          10520 PRINT "JJ";B$
          10530 B$=E$
          10540 B$=REP("------------------------------",24,29)
```

```
          10550 PRINT B$
          10560 B$=E$
          10570 B$=REP("Sample Location",5,15)
          10580 B$=REP("True",25,4)
          10590 B$=REP("Lower 95%",32,9)
          10600 B$=REP("Upper 95%",44,9)
          10605 B$=REP("TIME",59,4)
          10610 PRINT B$

          10620 REM  Print Data

++++++    10630 B$=E$
          10640 X$=SEG(T$,21,6)
          10650 B$=REP(X$,5,6)
          10660 X$=SEG(T$,116,2)
          10670 B$=REP(X$,15,2)
          10680 L$=STR(X0)
          10690 GOSUB 58000
          10700 IF X0=>1.0E-3 THEN 10730
          10710 L$=L$+"*"
          10720 Q0=1+Q0
++++++    10730 B$=REP(L$,24,Q0)
          10740 IF X0<0.00115 THEN 10022
          10750 L$=STR(U0)
          10760 GOSUB 58000
          10770 GOSUB 14000
          10780 B$=REP(L$,34,Q0)
          10790 L$=STR(L0)
          10800 GOSUB 58000
          10810 GOSUB 14000
          10820 B$=REP(L$,46,Q0)
++++++    10822 L$=SEG(T$,120,4)
          10824 B$=REP(L$,56,4)
          10826 L$=SEG(T$,124,4)
          10828 B$=REP(L$,62,4)
          10830 PRINT B$
          10840 RETURN

          13999 REM check if data is from location "DR","OR","RA","LA"
-------------------------------------------------------------------------------

---2---   14000 Y$=SEG(T$,116,2)
          14010 IF Y$="DR" OR "CR"=Y$ OR Y$="RA" OR Y$="LA" THEN 14030
          14020 L$=SEG(E$,1,Q0)
++++++    14030 RETURN

          14995 REM    Solve Linear Regression in Reverse
          14996 REM    for Upper and Lower Confidence Limits
          14997 REM    Y0,X0      L0,U0
          14998 REM    T-VALUES    L=0.025    U=0.975
-------------------------------------------------------------------------------

----1---  15000 X7=X0
          15010 U0=0

          15020 REM  Transform Y0

          15030 Y0=(Y0+P(31))^P(29)
```

```
          15040 Y7=Y0
          15042 IF P(8)<42 THEN 15050
          15044 T3=3.8416*P(6)
          15046 GO TO 15060
+++1+++   15050 T3=17(P(8)-2)^2*P(6)
+++1+++   15060 A1=P(2)*P(2)-P(10)*T3
          15070 B1=P(2)*(Y7-P(1))-P(11)*T3
          15080 A9=(X7+P(30))^P(7)
          15090 B3=0
          15100 A2=A9+P(12)
          15110 B2=Y7-P(1)
          15120 A3=T3*(P(11)^2-P(10)*A2)+P(2)*P(2)*A2+B2*(P(10)*B2-2*P(2)*P(11))
          15125 IF A3<0 THEN 15190
          15127 IF P(8)>42 THEN 15134
          15130 B3=T7(P(8)-2)*SQR(A3*P(6))
          15132 GO TO 15140
+++1+++   15134 B3=1.96*SQR(A3*P(6))
+++1+++   15140 X7=(B1+B3)/A1
          15150 L0=X7-P(32)
          15160 X7=(B1-B3)/A1
          15170 U0=X7-P(32)
          15180 RETURN
+++1+++   15190 PRINT "IMAGINARY ROOTS"
          15200 L0=10000
          15210 X7=10000
          15220 U0=10000
          15230 RETURN

---1---   16000 PRINT "Processing QL & QP data for "M$
          16010 C=0
          16020 Q$=" "
          16030 GOSUB 7000
          16040 IF N=0 THEN 16570
          16050 P=0
          16060 P(3)=3
          16070 GOSUB 3000
          16080 GOSUB 20000
          16090 GOSUB 25000
          16100 P(13)=C8
          16110 P(14)=A1
          16120 M1=0
          16130 M2=0
          16140 M3=0
          16150 M4=0
          16160 M5=0
          16170 P(8)=N
          16180 FOR I=1 TO P(8)
          16190  M1=M1+X1(I)
          16200  M2=M2+Y1(I)
          16210  M3=M3+X1(I)*X1(I)
          16220  M4=M4+Y1(I)*Y1(I)
          16230  M5=M5+X1(1)*Y1(I)
          16240 NEXT I
          16250 C=P(8)*M3-M1*M1
          16260 P(10)=P(8)/C
          16270 P(11)=M1/C
          16280 P(12)=M3/C
          16290 P(2)=(P(8)*M5-M1*M2)/(P(8)*M3-M1*M1)
          16300 P(1)=(M2-P(2)*M1)/P(8)
```

```
          16310 P(4)=P(1)
          16320 P(5)=P(2)
          16330 D=0
          16340 FOR I=1 TO P(8)
          16350   D=D+(Y1(I)-P(1)-P(2)*X1(I))^2
          16360 NEXT I
          16370 P(23)=1-D/(M4-M2*M2/P(8))
          16390 P(6)=D/(P(8)-2)
          16400 P(9)=1
          16410 P(29)=1
          16420 P(27)=P(6)
          16430 L$="Found vs Target "&V$
          16440 L$=L$&" - "
          16450 L$=L$&N$
          16460 DIM Y$(30)
          16470 X$="Found"
          16480 Y$="Target"
          16490 D$=SEG(B$,14,2)
          16500 D$=D$&"/"
          16510 W$=SEG(B$,12,2)
          16520 D$=D$&W$
          16530 D$=D$&"/"
          16540 W$=SEG(B$,16,2)
          16550 D$=D$&W$
          16560 GOSUB 61000
++++++    16570 RETURN

          19995 REM
          19996 REM Perform BARTLETT'S TEST for homogeneity
          19997 REM P(6),P(7),Y2(J),X2(N0(J)),K,C8,M1
          19998 REM  find variance for each level
          19999 REM
-----------------------------------------------------------------------------------------

---2---   20000 ON SIZE THEN 20370
          20010 C8=-1
          20020 IF K=0 THEN 20370
          20030 S3=1
          20040 S=0
          20050 GOSUB 6000
          20060 S=0
          20070 FOR J=1 TO N
          20080   IF N2(J)=-1 THEN 20110
          20090   S(N2(J))=S(N2(J))+(Y1(J)-M7(N2(J))/N0(N2(J)))^2
++++++    20110 NEXT J
          20120 FOR J=1 TO K
          20130   S(J)=S(J)/(N0(J)-1)
          20140   IF S(J)=0 THEN 20370
          20150 NEXT J

          20160 REM find pooled variance

          20170 A=0
          20180 S2=1
          20190 FOR J=1 TO K
          20200   A=(N0(J)-1)*S(J)/S3+A
          20210 NEXT J
          20220 Q4=A/(N7-K)
```

```
20230 REM find correction factor

20240 A=0
20250 FOR J=1 TO K
20260 A=1/(NO(J)-1)+A
20270 NEXT J
20280 C=1+A/(3*(K-1))

20290 REM  find CHI-SQUARE

20300 A=0
20310 FOR J=1 TO K
20320 A=(NO(J)-1)*LOG(S(J)/S3)+A
20330 NEXT J
20340 CB=((N7-K)*LOG(S4)-A)/C
20350 IF CB>0 THEN 20390
```

```
---3--- 20370 PRINT "BARTLETT'S TEST not defined for data set ";H$
        20380 CB=-1
******* 20390 M1=K-1
        20400 OFF SIZE
        20410 RETURN

        21999 REM CHI-SQUARE DISTRIBUTION
```

```
---2--- 25000 IF CC->0 THEN 25030
        25010 A1=-1
******* 25020 RETURN
******* 25030 A1=0
        25040 IF CB>100 THEN 25020
        25050 A=B1/2
        25060 B=B2/2
        25070 GOSUB 25120
        25080 IF A1=0 THEN 25020
        25090 A2=10^(5+INT(-LGT(A1)))
        25100 A1=INT(A2*A1+0.5)/A2
        25110 RETURN
```

```
---1--- 25120 IF A>100 THEN 25630
        25130 A1=1
        25140 A2=1
        25150 B2=1
        25160 I=1
        25170 IF U>A THEN 25320
        25180 B1=U
        25190 B2=U+1-A
******* 25200 A1=A*A2+I*A1
        25210 B1=U*B2+I*B1
        25220 I=I+1
        25230 A2=A1+(I-A)*A2
        25240 B2=B1+(I-A)*B2
        25250 IF A2/(A1/B1-A2/B2)>1.0E-7 THEN 25200
        25260 A2=A2/B2
        25270 F2=A*LOG(U)-U
        25280 K=A
        25290 GOSUB 25470
```

```
          25300 A1=C9*EXP(F2-A1)
          25310 RETURN
++++++++  25320 B1=1+A
          25330 A1=B1=U
++++++++  25340 C9=2*I+A
          25350 A2=C9*A1+I*U*A2
          25360 B2=C9*B1+I*U*B2
          25370 A1=C9*A2+A2-(A+I)*U*A1
          25380 B1=C9*B2+B2-(A+I)*U*B1
          25390 I=I+1
          25400 IF ABS(A2/B2-A1/B1)>1.0E-8 THEN 25340
          25410 C9=B1/A1
          25420 X=A+1
          25430 GOSUB 25470
          25440 A1=A*LOG(U)-U-A1
          25450 A1=1-C9*EXP(A1)
          25460 RETURN

---------- ------------------------------------------------------------------------
---2---   25470 IF X<10 THEN 25500
          25480 GOSUB 25600
          25490 RETURN
++++++++  25500 A2=10-INT(X)
          25510 B1=1
          25520 FOR I=0 TO A2-1
          25530   B1=B1*(X+I)
          25540 NEXT I
          25550 X=X+A2
          25560 GOSUB 25600
          25570 X=X-A2
          25580 A1=A1-LOG(B1)
          25590 RETURN

---------- ------------------------------------------------------------------------
-- 2---   25600 A1=(X-0.5)*LOG(X)-X+0.5*LOG(2*PI)
          25610 A1=A1+1/(12*X)-1/(360*X*X*X)+1/(1260*X*X*X*X*X)
          25620 RETURN
++++++++  25630 A=-0.5
          25640 B1=U+1/3-A-0.02/A
          25650 X=A1/U
          25660 C9=0
          25670 IF X=0 OR X=1 THEN 25690
          25680 C9=(1-X+X*2*X*LOG(X))/((1-X)*(1-X))
++++++++  25690 C9=B1*SQR((1+C9)/U)
          25700 IF ABS(C9)<20 THEN 25780
          25710 T=1/(1+0.2316419*ABS(C9))
          25720 A1=1*(0.31938153*T*(-0.3565637B2+1.781477937*T))
          25730 A1=A1+T*T*T*T*(-1.821255978+1.330274429*T)
          25740 A1=SQR(1/(2*PI))*EXP(-C9*C9/2)*A1
++++++++  25750 IF C9<0 THEN 25770
          25760 A1=1-A1
++++++++  25770 RETURN
++++++++  25780 A1=0
          25790 GO TO 25750

          25900 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
          25910 REM ENTERED WITH CONTAINING NUMBER IN CHARACTER FORM THAT
          25920 REM     IS TO BE PRINTED OUT TO 3 DECIMAL PLACES
          25930 REM     RESULTANT STRING ISPASSED BACK IN L$
          25940 REM     FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 6
```

```
---3---   58000 K$=SEG(L$,2,1)
          58010 IF K$="-" THEN 58120
          58070 00=POS(L$,"E",1)
          58030 IF 00<>0 THEN 58070
          58040 L$=SEG(L$,1,6)
          58050 00=6
          58060 RETURN

+++1+++   58070 REM NUMBER IS IN SCIENTIFIC NOTATION

          58080 K$=SEG(L$,00+1,4)
          58090 00=VAL(K$)
          58100 IF 00>0 THEN 58260
          58110 IF 00=-4 THEN 58150
+++1+++   58120 L$=" 0.000"
          58130 00=6
          58140 RETURN
+++1+++   58150 K$=SEG(L$,1,1)
          58160 K$=K$+"0."
          58170 GO TO -00 OF 58200,58190,58180
+++1+++   58180 K$=K$+"0"
+++1+++   58190 K$=K$+"0"
+++1+++   58200 00=6-LEN(K$)
          58210 L$=SEG(L$,2,00+1)
          58220 L$=REPT("",2,1)
          58230 L$=K$+L$
          58240 00=6
          58250 RETURN

+++1+++   58260 REM SECTION TO PRINT OUT $>0

          58270 L$=SEG(L$,1,5)
          58280 L$=L$+"E"
          58290 L$=L$+K$
          58300 00=6-LEN(K$)
          58310 RETURN

          59998 REM FIND / OPEN
          59999 REM F$  N9

---5---   60000 FIND @U2:0
          60010 FIND @U2:1
          60020 INPUT @U2:B$
          60030 J$=SEG(B$,1,3)
          60040 IF J$  "IDS" THEN 60300
+++1+++   60050 INPUT @U2,6:A
          60060 IF A=1 THEN 60140
          60070 INPUT @U2:B$
          60080 DIM J$(10)
          60090 J$ SEG(B$,4,10)
          60100 F=LEN(F$)
          60110 DIM J$(F)
          60120 IF F$=J$ THEN 60170
          60130 GO TO 60050
+++1+++   60140 PRINT "ERROR *** FILE "F$" NOT FOUND"
```

```
        60150 PRINT @U2,2:
        60160 END
+++1+++ 60170 J$=SEG(B$,1,3)
        60180 N9=VAL(J$)
        60190 FIND @U2:0
        60200 FIND @U2:N9
        60210 INPUT @U2:B$
        60230 J$=SEG(B$,1,F)
        60240 IF J$<>F$ THEN 60260
        60250 RETURN
+++1+++ 60260 PRINT "File does not match internal name"
        60270 PRINT "index name= ";F$;"  internal name=";J$
+++1+++ 60280 PRINT @U2,2:
        60290 END
+++1+++ 60300 PRINT "Tape in external drive is not a IDS Data Tape"
        60310 GO TO 60280

        60998 REM Define and Write Plot File
        60999 REM M$,L$,X$,Y$,D$,F$,F6

-------------------------------------------------------------------------------

---2---  61000 DIM P$(3)
        61010 P$="000"
        61020 FIND @U2:0
        61030 FIND @U2:1
+++2+++ 61040 INPUT @U2,6:A
        61050 IF A<>2 THEN 61120
        61060 INPUT @U2:B$
        61070 A$=SEG(B$,4,6)
        61080 Q$="P"&M$
        61090 IF A$<>Q$ THEN 61040
        61100 P$=SEG(B$,10,2)
        61110 GO TO 61040
+++1+++ 61120 T3=VAL(P$)
        61130 T3=1+T3
        61140 P$=STR(T3)
        61150 F$="P"&M$
        61160 F$=F$&P$

        61170 REM update index

        61180 A$=SEG(B$,1,3)
        61190 T3=VAL(A$)
        61200 T3=1+T3
        61210 I$=" "
        61220 PRINT @U2: USING 61230:T3,F$,"T",I$
        61230 IMAGE 3D,10A,1A,20A
        61240 PRINT @U2,2:
        61250 FIND @U2:0
        61260 FIND @U2:T3
        61270 MARK @U2:1,2500
        61280 FIND @U2:0
        61290 FIND @U2:T3
        61300 PRINT @U2: USING 61310:F$,D$,U$
        61310 IMAGE 10A,8A,8A
        61320 PRINT @U2:L$
        61330 PRINT @U2:X$
        61340 PRINT @U2:Y$
        61350 PRINT @U2:M$
```

```
61360 PRINT @02;D$
61370 PRINT @02;P
61380 DIM X2(P(8)),Y2(P(8))
61390 PRINT @02;X2,Y2
61400 PRINT @02,2;
61405 DELETE X2,Y2
61407 DIM X2(32),Y2(32)

61410 REM Update plotfiles

61420 F$="PLOTFILES"
61430 GOSUB 60000
******* 61440 INPUT @02,6;A
61450 IF A<>2 THEN 61480
61460 INPUT @02;I4
61470 GO TO 61440
******* 61480 PRINT @02;I3
61490 PRINT @02,2;
61500 RETURN
```

FILE # 3

```
100 INIT
110 DATA 33,11,32
120 READ U1,U2,U3
130 DIM D$(8),U$(8)
140 DIM T7(40)
150 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
160 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
170 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
180 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2.023,2.022
190 READ T7
200 FIND @U2:0
210 FIND @U2:2
220 INPUT @U2,6:A
230 IF A=1 THEN 2050
240 INPUT @U2:U$,D$
250 DIM N1(20),I1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
260 PRINT @U3,17:4

270 REM*
280 REM* GET LIST OF FILES TO BE PLOTTED
290 REM*

300 F$="PLOTFILES"
310 GOSUB 3620
320 I=0
330 I=I+1
340 INPUT @U2,6:A
350 IF I=1 AND A=1 THEN 2060
360 INPUT @U2:N1(I)
370 INPUT @U2,6:T1(2)
380 IF T1(2)=2 THEN 330
390 I1(1)=I

400 REM*
410 REM* START PLOT LOOP
420 REM*

430 FOR I9=1 TO T1(1)
440  FIND @U2:0
450  FIND @U2:N1(I9)
460  INPUT @U2:Z$
470  INPUT @U2:L$
480  INPUT @U2:X$
490  INPUT @U2:Y$
500  INPUT @U2:A$
510  INPUT @U2:D$
520  INPUT @U2:P
521  IF I9>1 THEN 530
525  D0=P(3)
530  IF P(8)=0 THEN 2040
540  DELETE X,Y
550  DIM X(P(8)),Y(P(8))
560  N=P(8)
565  INPUT @U2:X,Y

570  REM*
580  REM* SET DEFAULT PLOT PARAMETER
590  REM*
```

```
      600  REM T(4)=MIN X VALUE OF GRAPH      T(5)=LENGTH OF X AXIS
      610  REM T(14)=MIN Y VALUE              T(15)=LENGTH OF Y AXIS

++++++ 620  VIEWPORT 0,130,0,100
      630  WINDOW 0,130,0,100
      640  T=0
      650  T(1)=P(8)
      660  T(2)=2
      670  T(3)=4
      680  T(4)=10
      690  T(5)=70
      700  T(8)=1
      710  T(9)=1
      720  T(14)=25
      730  T(15)=70
      740  T(18)=1
      750  T(19)=1

      760  REM LABEL PLOT
      770  REM TITLE GRAPH

      780  X0=T(5)/2+T(4)-LEN(L$)*7/8
      790  Y0=97
      800  PAGE
      810  MOVE @U3:X0,Y0
      820  PRINT @U3:L$

      830  REM DUMP X AXIS TITLE

      840  X0=T(5)/2+T(4)-LEN(X$)*7/8
      850  Y0=T(14)-10
      860  MOVE @U3:X0,Y0
      870  PRINT @U3:X$

      880  REM DUMP Y AXIS LABEL

      890  X0=3
      900  Y0=T(15)/2+T(14)+LEN(Y$)*10/7
      910  MOVE @U3:X0,Y0
      920  PRINT @U3:" "
      930  FOR Z=1 TO LEN(Y$)
      940   Z$=SEG(Y$,Z,1)
      950   PRINT @U3:Z$
      960  NEXT Z

      970  REM DISPLAY INFO ON RIGHT SIDE OF PLOT

      980  X0=T(4)+T(5)+5
      990  Y0=T(14)+T(15)-2
     1000   MOVE @U3:X0,Y0
     1010   PRINT @U3:"AGENT: "+A$
     1020   Y0=Y0-5
     1030   MOVE @U3:X0,Y0
     1040   PRINT @U3:"DATE: "+D$
     1050   Y0=Y0-5
     1060   MOVE @U3:X0,Y0
     1070   PRINT @U3:"STATISTICS"
     1080   MOVE @U3:X0,Y0-0.5
     1090   PRINT @U3:"----------"
     1100   Y0=Y0-4
```

```
          1110  T9=2
          1120  IMAGE FA,2D.3D,FA,S
          1130  Y0=Y0-3
          1140  MOVE @U3;X0,Y0
          1150  PRINT @U3;"BARTLETTS;"
          1160  Y0=Y0-3
          1170  MOVE @U3;X0+T9,Y0
          1180  PRINT @U3; USING 1120;"";P(14);""
          1190  IF P(20)=0 THEN 1210
          1200  PRINT @U3; USING 1120;"/";P(20);""
++++++    1210  Y0=Y0-3
          1220  IMAGE FA,2D.3D
          1230  MOVE @U3;X0,Y0
          1240  PRINT @U3;"R-SQUARED;"
          1250  Y0=Y0-3
          1260  MOVE @U3;X0+T9,Y0
          1270  PRINT @U3; USING 1220;"";P(23)
          1280  IMAGE FA,3E
          1290  Y0=Y0-3
          1300  MOVE @U3;X0,Y0
          1310  PRINT @U3;"MSE;"
          1320  Y0=Y0-3
          1330  MOVE @U3;X0+T9,Y0
          1340  PRINT @U3; USING 1280;"";P(27)
          1350  Y0=Y0-6
          1360  MOVE @U3;X0,Y0
          1370  PRINT @U3;"PARAMETERS"
          1380  MOVE @U3;X0,Y0-0.5
          1390  PRINT @U3;"----------"
          1400  Y0=Y0-4
          1410  IMAGE FA,3D.2D,FA,2D.3D,FA,S
          1420  MOVE @U3;X0,Y0
          1430  GO TO P(3) OF 1480,1450,1510

          1440  REM   case 2    Y=ln(Y)

++++++    1450  PRINT @U3;"ln(Y)=a+bX"
          1460  GO TO 1520

          1470  REM   case 1    X=ln(X)

++++++    1480  PRINT @U3;"Y=a+b ln(X)"
          1490  GO TO 1520

          1500  REM   case 3    no transform

++++++    1510  PRINT @U3;"Y=a+bX"
++++++    1520  Y0=Y0-3
          1530  MOVE @U3;X0+T9,Y0
          1540  PRINT @U3; USING 1280;"a= ",P(4)
          1550  Y0=Y0-3
          1560  MOVE @U3;X0+T9,Y0
          1570  PRINT @U3; USING 1280;"b= ",P(5)
          1580  IF P(7)=0 THEN 1720
          1590  Y0=Y0-3
          1600  MOVE @U3;X0+T9,Y0
          1610  MOVE @U3;X0,Y0
          1620  PRINT @U3;"S(X) = c(X + e)^d"
          1630  Y0=Y0-3
          1640  MOVE @U3;X0+T9,Y0
```

```
          1650  PRINT @U3: USING 1280:"c= ",P(6)
          1660  Y0=Y0-3
          1670  MOVE @U3:X0+T9,Y0
          1680  PRINT @U3: USING 1280:"d= ",P(7)
          1690  Y0=Y0-3
          1700  MOVE @U3:X0+T9,Y0
          1710  PRINT @U3: USING 1280:"e = ",P(30)
+++1+++   1720  Y0=Y0-3
          1730  MOVE @U3:X0,Y0
          1732  IF P(3)<>2 THEN 1740
          1734  PRINT @U3:"Y' = f - Y"
          1736  GO TO 1750
+++1+++   1740  PRINT @U3:"Y' = (Y + f)^g"
+++1+++   1750  Y0=Y0-3
          1760  MOVE @U3:X0,Y0
          1770  PRINT @U3:"X' = X + h"
          1780  Y0=Y0-3
          1790  MOVE @U3:X0+T9,Y0
          1800  PRINT @U3: USING 1280:"f = ",P(31)
          1810  Y0=Y0-3
          1820  MOVE @U3:X0+T9,Y0
          1825  IF P(3)=2 THEN 1850
          1830  PRINT @U3: USING 1280:"g = ",P(29)
          1840  Y0=Y0-3
+++1+++   1850  MOVE @U3:X0+T9,Y0
          1860  PRINT @U3: USING 1280:"h = ",P(32)
          1870  MOVE @U3:T(4)+T(5),T(14)
          1880  DRAW @U3:T(4)+T(5),T(14)+T(15)
          1890  DRAW @U3:T(4),T(14)+T(15)
          1900  GOSUB 4000
          1910  IF U3=1 THEN 1980
          1920  PRINT "CLS"
          1930  PRINT "DO YOU WANT A PLOTTER PLOT OF THIS PLOT? (Y/N)"
          1940  INPUT D$
          1950  IF D$<>"Y" THEN 1980
          1960  U3=10
          1970  GO TO 620
+++2+++   1980  U3=32
          1990  GO TO 2000
+++1+++   2000 NEXT I9

          2010 REM

          2020 FIND 4
          2030 OLD
+++1+++   2040 PRINT "NO DATA SETS FOUND ON THIS TAPE "
+++1+++   2050 END
+++1+++   2060 PRINT "THERE ARE NO PLOT FILES CURRENTLY QUEUED TO BE PRINTED"
          2070 END

          2080 REM*
          2090 REM* PLOT SUBROUTINES
          2100 REM*

---------------------------------------------------------------------------------
---1---   2110 REM$

          2120 U2=4
          2130 GOSUB 3160
          2140 U9=14
```

```
          2150 GOSUB 3160
          2160 U0=4
          2170 Y0=Y0-5
          2180 MOVE @U3:X0,Y0
          2190 PRINT @U3:"SCALE FACTORS!";
          2200 MOVE @U3:X0,Y0-0.5
          2210 PRINT @U3:"_____ _______"
          2220 Y0=Y0-4
          2230 MOVE @U3:X0,Y0
          2240 PRINT @U3:"X axis: 10^";X2
          2250 Y0=Y0-3
          2260 MOVE @U3:X0,Y0
          2270 PRINT @U3:"Y axis: 10^";Y2
          2280 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
          2290 WINDOW T(6),T(6)+T(7),T(16),T(16)+T(17)
          2300 AXIS @U3:T(8),T(18)
          2310 J=1
          2320 R2=T(18)/(T(17)/T(15))
          2330 R3=T(14)
++++++    2340 U$=STR(T(16)+(J-1)*T(18))
          2350 PRINT @U3,21:0 MAX T(4)-(LEN(U$)+1)*1.78,R3-0.89
          2360 PRINT @U3:U$;
          2370 IF J>T(19) THEN 2410
          2380 R3=R3+R2
          2390 J=1+J
          2400 GO TO 2340
++++++    2410 R2=T(8)/(T(7)/T(5))
          2420 R3=T(4)
          2430 J=1
++++++    2440 U$=STR(T(6)+(J-1)*T(8))
          2450 PRINT @U3,21:0 MAX R3-(LEN(U$)+1)*1.78*0.5,T(14)-4
          2460 PRINT @U3:U$;
          2470 IF J>T(9) THEN 2510
          2480 R3=R3+R2
          2490 J=1+J
          2500 GO TO 2440
++++++    2510 FOR J=1 TO T(1)
          2520  IF T(2)<>1 THEN 2540
          2530  IF J>1 THEN 2560
++++++    2540  MOVE @U3:X(J),Y(J)
          2550  GO TO 2570
++++++    2560  DRAW @U3:X(J),Y(J)
++++++    2570  GOSUB 2600
          2580 NEXT J
          2590 RETURN

-------------------------------------------------------------------------------
---1---   2600 S2=T(14+3)/T(14+1)*0.75
          2610 S1=T(4+3)/T(4+1)*0.75
          2620 GO TO T(3) OF 2910,2640,2700,2770,2840
          2630 GO TO 2910
++++++    2640 RMOVE @U3:0,S2
          2650 RDRAW @U3:S1,-2*S2
          2660 RDRAW @U3:-2*S1,0
          2670 RDRAW @U3:S1,2*S2
          2680 RMOVE @U3:0,-S2
          2690 RETURN
++++++    2700 RDRAW @U3:0,S2
          2710 RDRAW @U3:0,-2*S2
          2720 RDRAW @U3:0,S2
```

```
          2730 RDRAW @U3:-S1,0
          2740 RDRAW @U3:2*S1,0
          2750 RDRAW @U3:-S1,0
          2760 RETURN
+++1+++   2770 RMOVE @U3:S1,S2
          2780 RDRAW @U3:0,-2*S2
          2790 RDRAW @U3:-2*S1,0
          2800 RDRAW @U3:0,2*S2
          2810 RDRAW @U3:2*S1,0
          2820 RMOVE @U3:-S1,-S2
          2830 RETURN
++*1+++   2840 RMOVE @U3:0,S2
          2850 RDRAW @U3:S1,-S2
          2860 RDRAW @U3:-S1,-S2
          2870 RDRAW @U3:-S1,S2
          2880 RDRAW @U3:S1,S2
          2890 RMOVE @U3:0,-S2
          2900 RETURN
+++2+++   2910 IF T(2)=1 THEN 2930
          2920 RDRAW @U3:0,0
+++1+++   2930 RETURN

-------------------------------------------------------------------------------
---1---   2940 Y2=0
+++1+++   2950 T(16)=10^39
          2960 T(17)=-T(22)
          2970 FOR J=1 TO T(1)
          2980  T(16)=T(16) MIN Y(J)
          2990  T(17)=T(17) MAX Y(J)
          3000 NEXT J
          3010 T9=T(17)-T(16)
          3020 T(17)=T9*(T9<>0)+(T9=0)
          3030 IF T9<1 THEN 5300
          3040 RETURN

-------------------------------------------------------------------------------
---1---   3050 X2=0
+++1+++   3060 T(6)=10^39
          3070 T(7)=-T(12)
          3080 FOR J=1 TO T(1)
          3090  T(6)=T(6) MIN X(J)
          3100  T(7)=T(7) MAX X(J)
          3110 NEXT J
          3120 T9=T(7)-T(6)
          3130 T(7)=T9*(T9<>0)+(T9=0)
          3140 IF T9<1 THEN 5350
          3150 RETURN

-------------------------------------------------------------------------------
---2---   3160 DIM S0(5)
          3170 S0(3)=INT((U9+1)/15)
          3180 S0(3)=(U9+3)/S0(3)
          3190 S0(4)=INT(ABS(LGT(S0(3))))*SGN(LGT(S0(3)))
          3200 S0(4)=INT(10^S0(4)+1.0E-4)
          3210 IF S0(4)>0 THEN 3250
          3220 S0(3)=1
          3230 S0(4)=1
          3240 GO TO 3130
+++1+++   3250 S0(5)=S0(3)/S0(4)
          3260 S0(3)=S0(4)*10
```

```
          3270 IF S0(5)=>10 THEN 3290
          3280 S0(3)=S0(4)*5
+++1+++   3290 IF S0(5)=>5 THEN 3310
          3300 S0(3)=S0(4)*2
++++1+++  3310 IF S0(5)=>2 THEN 3330
          3320 S0(3)=S0(4)
+++2+++   3330 S0(5)=T(U9+2)/S0(3)
          3340 IF S0(5)=>0 THEN 3360
          3350 S0(5)=S0(5)-0.9999
+++1+++   3360 S0(1)=S0(3)*(INT(ABS(S0(5)))*SGN(S0(5)))
          3370 S0(5)=(T(U9+3)+T(U9+2))/S0(3)
          3380 IF S0(5)<0 THEN 3400
          3390 S0(5)=S0(5)+0.9999
+++1+++   3400 S0(2)=S0(3)*(INT(ABS(S0(5)))*SGN(S0(5)))
          3410 S0(5)=S0(2)-S0(1)
          3420 S0(4)=INT(INT(ABS(S0(5)))*SGN(S0(5))/S0(3))
          3430 IF S0(5)=>1 THEN 3460
          3440 S0(3)=S0(5)
          3450 S0(4)=1
++++1+++  3460 IF S0(3)=>1 THEN 3490
          3470 S0(3)=S0(5)
          3480 S0(4)=1
+++1+++   3490 T(U9+2)=S0(1)
          3500 T(U9+3)=S0(2)-S0(1)
          3510 T(U9+4)=S0(3)
          3520 T(U9+5)=S0(4)
          3530 T(U9+6)=1.75*T(U9+3)/T(U9+1)
          3540 RETURN

-------------------------------------------------------------------------------

---1---   3620 REM     FIND/OPEN
          3630 REM* (F$,N9)

          3640 FIND @U2:0
          3650 FIND @U2:1
          3660 INPUT @U2:B$
          3670 J$=SEG(B$,1,3)
          3680 IF J$<>"IDS" THEN 3970
++++1+++  3690 INPUT @U2,6:A
          3700 IF A=1 THEN 3780
          3710 INPUT @U2:B$
          3720 DIM J$(10)
          3730 J$=SEG(B$,4,10)
          3740 F=LEN(F$)
          3750 DIM J$(F)
          3760 IF J$=F$ THEN 3820
          3770 GO TO 3690

++++1+++  3780 REM$

          3790 PRINT "ERROR **** FILE";F$;"NOT FOUND"
          3800 CLOSE
          3810 END
++++1+++  3820 J$=SEG(B$,1,3)
          3830 N9=VAL(J$)
          3840 FIND @U2:0
          3850 FIND @U2:N9
          3860 INPUT @U2:B$
          3870 DIM J$(10)
```

```
        3860 J$=SEG(B$,1,10)
        3870 F=LEN(F$)
        3900 DIM J$(F)
        3910 IF J$ F$ THEN 3930
        3920 RETURN
++++++  3930 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
        3940 PRINT "INDEX NAME =";F$;"INTERNAL NAME =";J$
        3950 PRINT @U2,2;
        3960 END
++++++  3970 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
        3980 PRINT @U2,2;
        3990 END
```

```
-1---   4000 REM*  PLOT DATA,CURVE AND CONFIDENCE LIMITS

        4010 GOSUB 2940
        4020 GOSUB 3050

        4050 REM* ADJUST X RANGE

        4060 T(6)=T(6)-0.1*T(7)
        4070 T(6)=T(6) MAX 0.01*T(7)
        4080 T(7)=T(7)*1.2

        4090 REM*  ADJUST Y-RANGE

        4100 T(16)=T(16)-0.05*T(17)
        4110 T(16)=T(16) MAX 0.01*T(17)
        4120 T(17)=T(17)*1.1

        4130 REM*  PLOT OBSERVED DATA

        4140 GOSUB 2110

        4150 REM*
        4160 REM*  DRAW @U3:UPPER AND LOWER CONFIDENCE LIMITS
        4170 REM*
        4180 REM   T(16)=T(16)+0.01*T(17)

        4190 Y0=T(16)
        4200 GOSUB 4820
        4220 MOVE @U3:X0*10^-X2,T(16)*10^-Y2
        4230 FOR Y5=T(16) TO T(16)+T(17) STEP T(17)/100
        4240  Y0=Y5
        4250  GOSUB 4820
        4260  DRAW @U3:X0*10^-X2,Y5*10^-Y2
        4270 NEXT Y5
        4280 Y0=T(16)
        4290 GOSUB 4820
        4300 Y0=T(16)
        4310 DO T(16)
        4320  GOSUB 4850
        4330 MOVE @U3:X0*10^-X2,T(16)*10^-Y2
        4340 DO T(16)
        4350 Y0=T(16)
        4360 FOR Y5=(T(16)-T(17))*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
        4370  IF P(3)=2 AND Y5=-P(31) THEN 4470
        4380  Y0=Y5
```

```
        4400  GOSUB 4820
        4410  Y0=Y5
        4420  GOSUB 4950
        4440  DRAW @U3:L0*10^-X2,Y5*10^-Y2
        4450  IF L0>0 THEN 4470
        4460  D8=U0
+++2+++ 4470 NEXT Y5
        4480 Y0=T(16)
        4490 GOSUB 4920
        4500 Y0=T(16)
        4510 GOSUB 4950
        4530 MOVE @U3:U0*10^-X2,T(16)*10^-Y2
        4540 FOR Y5=(T(16)-T(17))*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
        4550  IF P(3)=2 AND Y5<=-P(31) THEN 4620
        4560  Y0=Y5
        4570  GOSUB 4620
        4580  Y0=Y5
        4590  GOSUB 4950
        4610  DRAW @U3:U0*10^-X2,Y5*10^-Y2
+++1+++ 4620 NEXT Y5
        4630 T4=10000
        4640 FOR T5=1 TO N
        4650  IF X(T5)<=0 THEN 4670
        4660  T4=T4 MIN X(T5)*10^X2
+++1+++ 4670 NEXT T5
        4680 IF D8<T4 THEN 4700
        4690 D8=T4
+++1+++ 4700 VIEWPORT 0,130,0,100
        4710 WINDOW 0,130,0,100

        4720 REM$$  X$="DETECTION LIMIT IS "
        4723 REM$$$    IF D8<>10000 THEN 4730

        4725 X$=" "

        4726 REM$$$$   X$="WARNING - Detection Limit EGRGRBOGR"

        4728 GO TO 4770
        4730 Y$=STR(D8)
        4740 Y0=POS(Y$,".",1)
        4750 Y$=SEG(Y$,1,Y0+2)
        4760 X$=X$&Y$
+++1+++ 4770 X0=T(5)/2+T(4)-LEN(X$)*7/8
        4780 Y0=T(14)-14
        4790 MOVE @U3:X0,Y0
        4800 PRINT @U3:X$
        4802 Y0=Y0-3
        4803 Y$=STR(D0)
        4805 X$="Calibration Curve # "&Y$
        4806 X0=T(5)/2+T(4)-LEN(X$)*7/8
        4808 MOVE @U3:X0,Y0
        4809 PRINT @U3:X$
        4810 RETURN

-----------------------------------------------------------------------------

 6---   4820 REM$
        4830 REM$  SOLVE LINEAR REGRESSION IN REVERSE FOR X0
        4840 REM$  (Y0;X0)
        4850 REM$ TRANSFORM Y0
```

```
        4855 IF P(3)=2 AND Y0=>P(31) THEN 4932
        4860 Y0=(Y0+P(31))^P(29)
        4870 IF P(3)=2 THEN 4890
        4880 Y0=LOG(2*P(31)-Y0)
+++1+++ 4890 X0=(Y0-P(1))/P(2)
        4900 IF P(3)=1 THEN 4920
        4910 X0=EXP(X0)
+++1+++ 4920 X0=X0-P(32)
        4930 RETURN
+++1+++ 4932 X0=-50
        4934 RETURN

        4940 REM*

-------------------------------------------------------------------------------
+++1+++ 4950 REM*
        4960 REM*      SOLVE LINEAR REGRESSION IN REVERSE FOR
        4970 REM*          UPPER AND LOWER CONFIDENCE LIMITS
        4980 REM*          (Y0,X0,L0,U0)
        4990 REM*     T-VALUES    L=.025     U=.975
        4991 REM  L0 is the lower curve if slope is positive
        4992 REM  U0 is the upper curve if slope is positive
        4993 REM  L0 is the upper curve if slope is negative
        4994 REM  U0 is the lower curve if slope is negative

        5000 T3=0
        5010 U0=0

        5020 REM* Power Transform

        5030 Y0=(Y0+P(31))^P(29)

        5040 REM Functional Transform

        5050 IF P(3)=2 THEN 5070
        5060 Y0=LOG(2*P(31)-Y0)
+++1+++ 5070 T3=T7(N-2)^2*P(6)
        5080 A1=P(2)^2-P(10)*T3
        5090 B1=P(2)*(Y0-P(1))-P(11)*T3
        5100 A2=(Y0+P(30))^P(7)+P(12)
        5110 B2=Y0-P(1)
        5120 A3=T3*P(11)^2-T3*P(10)*A2+P(2)^2*A2+P(10)*B2^2-2*P(2)*P(11)*B2
        5121 IF A3=0 THEN 5130

        5122 REM    ERROR ROUTINE

        5123 MOVE 903:10,10
        5124 PRINT 903;"Imaginary Roots:  Execution halted"
        5126 STOP

        5127 REM

+++1+++ 5130 B3=T7(N-2)*SQR(A3*N(6))
        5140 X0=(B1+B3)/A1

        5150 REM Inverse Functional Transform

        5160 IF P(3)=1 THEN 5180
        5170 X0=EXP(X0)
```

```
5180 D0=X0-P(32)
5190 X0=(B1-B3)/A1

5200 REM*    Inverse Functional transform

5210 IF P(3)<>1 THEN 5230
5220 X0=EXP(X0)
5230 L0=X0-P(32)
5240 RETURN

5290 REM scale X & Y for plot

5300 FOR J=1 TO T(1)
5310   Y(J)=10*Y(J)
5320 NEXT J
5330 Y2=Y2-1
5340 GO TO 2950
5350 FOR J=1 TO T(1)
5360   X(J)=10*X(J)
5370 NEXT J
5380 X2=X2-1
5390 GO TO 3060
```

FILE # 4

```
95 REM$ QC ANALYSIS

100 INIT
101 PRINT @32,26:0
102 SET DEGREES
104 DATA 33,11,32
105 READ U1,U2,U3
107 DIM Y1(31),Y2(31),Y3(31),X(31),Y(31),X9(31)
110 DIM U$(8),A1(31),B3(31),B4(31),D$(8),N$(2),M8(31),M9(31)
111 DIM L8(31),L9(31),U8(31),U9(31),S6(31),S7(31),Y8(31),Y9(31)
112 DATA 3.76,2.394,1.88,1.596,1.41,1.277,1.175,1.094,1.028,0.973,0.925
113 DATA 0.884,0.848,0.816,0.788,0.762,0.738,0.717,0.697,0.679,0.662
114 DATA 0.647,0.632,0.619,0.588,0.577,0.567,0.557,0.548,0.539,0.5303
115 READ A1
116 DATA 0,0,0,0,0,0.03,0.118,0.185,0.239,0.284,0.321,0.354,0.382,0.406
117 DATA 0.428,0.448,0.466,0.482,0.497,0.51,0.523,0.534,0.545,0.555
118 DATA 0.565,0.584,0.592,0.599,0.606,0.613,0.619
119 READ B3
120 DATA 0,3.267,2.568,2.266,2.089,1.97,1.882,1.815,1.761,1.716,1.679
121 DATA 1.646,1.618,1.594,1.572,1.552,1.534,1.518,1.503,1.49,1.477
122 DATA 1.466,1.455,1.445,1.435,1.416,1.408,1.401,1.394,1.387,1.381
123 READ B4
124 FIND @U2:0
130 FIND @U2:2
140 INPUT @U2,6:A
150 IF A=1 THEN 10100
160 INPUT @U2:U$,D$
170 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
180 DIM W8(7),W9(7),C$(130)
190 PRINT @U3,17:4
191 C$="JANUARY  "
192 C$=C$&"FEBRUARY "
193 C$=C$&"MARCH    "
194 C$=C$&"APRIL    "
195 C$=C$&"MAY      "
196 C$=C$&"JUNE     "
197 C$=C$&"JULY     "
198 C$=C$&"AUGUST   "
199 C$=C$&"SEPTEMBER"
200 C$=C$&"OCTOBER  "
201 C$=C$&"NOVEMBER "
202 C$=C$&"DECEMBER "

210 REM*
211 REM* GET LIST OF FILES TO BE PLOTTED
212 REM*

220 K9=0
!!!1!!! 230 K9=K9+1
240 K2=0
250 F$="PLOTSQC"
260 GOSUB 4845
!!!1!!! 270 INPUT @U2,6:A
280 IF A=2 AND K2=0 THEN 10000
282 IF A=2 THEN 10200
284 INPUT @U2:M$
286 INPUT @U2:D$
```

```
          288 INPUT @U2:O$
          290 INPUT @U2:C,P(25),P(26),P(28)
          300 K2=K2+1
          310 IF K9=K2 THEN 321
          320 GO TO 270
+++1+++   321 FS=0
          322 IF P(28)=4 THEN 330
          323 PRINT "IS THIS THE FIRST STAT RUN FOR TODAY? (Y/N);"
          324 INPUT A$
          325 IF A$="Y" THEN 330
          326 FS=1

+++2+++   330 REM* SET X LABEL

          350 N$=SEG(D$,4,2)

          355 REM* SET X LABEL

          360 A$=SEG(D$,1,2)
          361 A=VAL(A$)
          362 A=(A-1)*9+1
          363 X$=SEG(C$,A,9)

          370 REM$ GET HISTORY Q

          372 RESTORE 381
          375 F$="HQ"+M$
          380 GOSUB 4845
          381 DATA 0,0,0,0
          382 READ F1,F2,F3,F4
          390 INPUT @U2:K1,D7,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
          395 INPUT @U2:W8,W9,F1,F2,F3,F4
          396 FOR I=1 TO 31
          397   X9(I)=I
          399 NEXT I
          400 D8=VAL(N$)
          415 K1=P(28)+FS*K1
          416 F1=0
          417 F3=0

          420 REM* M9(D8)=(M9(D7)*(K-1)+P(25))/K
          430 REM* M8(D8)=(M8(D7)*(K-1)+P(26))/K

          440 Y9(D8)=P(25)+F5*Y9(D8)
          450 Y8(D8)=P(26)+F5*Y8(D8)
          460 IF K1=4 THEN 551
          461 PRINT "NO QC PLOT WILL BE PRODUCED FOR "+M$+" AT LEVEL "+C$+","
          462 PRINT "SINCE FOUR QC DATA POINTS ARE NOT YET AVAILABLE "
          463 GO TO 1080
          465 GO TO 551
          470 U9=M9(D8)+A1(K1)*M8(D8)
          480 L9=M9(D8)-A1(K1)*M8(D8)
          490 U8=M8(D8)+B3(K1)*M8(D8)
          499 L8=M8(D8)-B3(K1)*M8(D8)
          515 GO TO 551
          520 U9(D8)=M9(D8)+3/SQR(K1)*M8(D8)
          530 L9(D8)=M9(D8)-3/SQR(K1)*M8(D8)
          540 U8(D8)=(1+3/SQR(2*K1))*M8(D8)
          550 L8(D8)=(1-3/SQR(2*K1))*M8(D8)
```

```
+++3+++  551 REM* SET WARNING FLAGS

         552 IF NOT(Y9(D8)>U9(D8) OR Y9(D8)<L9(D8)) THEN 554
         553 F1=1
+++1+++  554 IF NOT(Y8(D8)>U8(D8) OR Y8(D8)<L8(D8)) THEN 556
         555 F3=1

+++1+++  556 REM* ZERO OUT DATA FROM D7 TO D8

         557 IF D7=D8 THEN 573
         558 I=D7
         560 IF D8>D7 THEN 562
         561 I=0
+++2+++  562 I=I+1
         563 IF I=D8 THEN 573
         564 Y9(I)=-1
         568 Y8(I)=-1
         572 GO TO 562

+++2+++  573 REM*
         620 REM* UPDATE WARNING

         621 F2=0
         622 F4=0
         625 FOR I=6 TO 1 STEP -1
         630   W8(I+1)=W8(I)
         640   W9(I+1)=W9(I)
         650 NEXT I
         660 IF Y9(D8)>M9(D8) THEN 690
         670 W9(1)=-1
         680 GO TO 700
+++1+++  690 W9(1)=1
>+++1+++ 700 IF Y8(D8)>M8(D8) THEN 730
         710 W8(1)=-1
         720 GO TO 740
+++1+++  730 W8(1)=1
+++1+++  740 FOR I=1 TO 7
         750   F2=F2+W9(I)
         760   F4=F4+W8(I)
         770 NEXT I
         771 F2=ABS(F2)
         772 F4=ABS(F4)

         780 REM* PLOT QC CHARTS

         790 E$="ACCURACY CONTROL CHART FOR "+M$
         810 Y$=" "
         820 W$=" "
         900 Y1=L9
         910 Y2=M9
         920 Y3=U9
         921 X=X9
         922 Y=Y9
         924 D=D8
         940 IF NOT(F1=1 OR F2=7) THEN 950
         949 W$="WARNING - PROCESS IS OUT OF CONTROL"

+++1+++  950 REM* GOSUB PLOT

         955 GOSUB 1775
```

```
         956 PRINT "[&J"
         960 IF U3=10 THEN 967
         961 PRINT "DO YOU WANT A 4662 PLOT? (Y/N)"
         962 INPUT B$
         963 A$=SEG(B$,1,1)
         964 IF A$<>"Y" THEN 967
         965 U3=10
         966 GOSUB 1775
+++2+++  967 U3=32
         970 E$="PRECISION CONTROL CHART FOR "&M$
         980 W$=" "
         990 Y=Y8
        1000 Y1=L8
        1010 Y2=M8
        1020 Y3=U8
        1025 D=D8
        1030 IF NOT(F3=1) THEN 1050
        1040 W$="WARNING - PROCESS IS OUT OF CONTROL"

+++1+++ 1050 REM& GOSUB PLOT

        1055 GOSUB 1775
        1056 PRINT "[&J"
        1060 IF U3=10 THEN 1067
        1061 PRINT "DO YOU WANT A 4662 PLOT? (Y/N)"
        1062 INPUT B$
        1063 A$=SEG(B$,1,1)
        1064 IF A$<>"Y" THEN 1067
        1065 U3=10
        1066 GOSUB 1775
+++2+++ 1067 U3=32

        1070 REM& UPDATE HISTORY 0 FILE

+++1+++ 1080 F$="HQ"&M$
        1090 GOSUB 4845
        1200 PRINT @02;K1,U8,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
        1210 PRINT @02;W8,W9,F1,F2,F3,F4
        1215 PRINT @02,2;
        1220 GO TO 230

        1755 REM&
        1760 REM& QC PLOT ROUTINES
        1765 REM&

---------------------------------------------------------------------------------

---4---  1775 DIM W$(60),J$(60)
        1785 DIM X9(31),Y9(31),Y3(31),T(24)
        2000 PAGE

        2015 REM& HEIGHT OF SPACE

        2025 H0=2.82

        2055 REM HEIGHT OF CHARACTER

        2065 H1=1.88

        2075 REM WIDTH OF SPACE
```

```
2085 H2=1.79

2095 REM WIDTH OF CHARACTER

2105 H3=1.55

2115 REM HEIGHT OF TIC MARK

2125 H4=1

2135 REM WIDTH OF TIC MARK

2145 H5=2
2155 VIEWPORT 0,130,0,100
2165 WINDOW 0,130,0,100

2175 REM X MIN

2185 T(4)=15

2195 REM X DOMAIN

2205 T(5)=105

2215 REM Y MIN

2225 T(14)=10

2235 REM Y RANGE

2245 T(15)=75

2255 REM BOX GRAPH

2265 MOVE @U3:T(4),T(14)
2275 DRAW @U3:T(4),T(14)+T(15)
2285 DRAW @U3:T(4)+T(5),T(14)+T(15)
2295 DRAW @U3:T(4)+T(5),T(14)
2305 DRAW @U3:T(4),T(14)

2315 REM MAKE TIC MARKS ON X AXIS

2325 FOR I=0 TO 34 STEP 2
2335  MOVE @U3:T(4)+I*3,T(14)+H4/2
2345  RDRAW @U3:0,-H4

2355  REM LABEL THE MARK

2365  RMOVE @U3:-H2,-H0
2370  IF I=0 OR I>31 THEN 2405
2375  IF I<10 THEN 2395
2385  RMOVE @U3:-H2,0
2395  PRINT @U3:I;
2405 NEXT I

2415 REM PRINT OUT WARNING

2420 A=LEN(W$)
2421 Y0=96
```

```
2423 IF A<2 THEN 2535
2425 X0=T(4)+(T(5)-LEN(W$)*H2)/2
2435 Y0=96
2445 MOVE @U3:X0,Y0
2455 PRINT @U3:W$;

2465 REM DRAW @U3:BOX AROUND WARNING

2475 MOVE @U3:X0-H2/2,Y0-H0/3
2485 RDRAW @U3:0,5*H0/3
2495 RDRAW @U3:(LEN(W$)+1)*H2,0
2505 RDRAW @U3:0,-5*H0/3
2515 RDRAW @U3:-(LEN(W$)+1)*H2,0

2525 REM WRITE TITLE

+++1+++  2535 Y0=Y0-5
2545 X0=T(4)+(T(5)-LEN(E$)*H2)/2
2555 MOVE @U3:X0,Y0
2565 PRINT @U3:E$;
2575 Y0=Y0-3
2585 X0=T(4)+(T(5)-LEN(J$)*H2)/2
2595 MOVE @U3:X0,Y0
2605 PRINT @U3:J$;

2615 REM PRINT X AXIS LABEL

2625 Y0=T(14)-3*H0
2635 X0=T(4)+(T(5)-LEN(X$)*H2)/2
2645 MOVE @U3:X0,Y0
2655 PRINT @U3:X$;

2665 REM Y AXIS LABEL

2675 X0=3
2685 Y0=T(14)+(T(15)+LEN(Y$)*H0)/2
2695 MOVE @U3:X0,Y0
2705 FOR I=1 TO LEN(Y$) STEP 1
2715  Z$=SEG(Y$,I,1)
2725  PRINT @U3:Z$;"JU";
2735 NEXT I

2745 REM END OF PRELIMINARIES  NOW DO PLOTS

2746 Y4=Y1(1)
2747 Y5=Y3(1)
2748 I=(Y5-Y4)/2
2749 O0=Y4-I
2750 O1=Y5+I
2751 GO TO 2780

2755 REM SET UP STUFF

2756 Y4=100000
2757 Y5=-100000
2758 FOR I=1 TO 31
2759  IF Y(I)<=0 THEN 2761
2760  Y4=Y4 MIN Y(I)
+++1+++  2761  IF Y1(I)<0 THEN 2763
2762  Y4=Y4 MIN Y1(I)
```

```
++++1+++  2763  YS=Y5 MAX Y(I)
          2764  YS=Y3 MAX Y3(I)
          2765 NEXT I

          2770 REM IN HERE GOES CODE TO PICK NEAT ENDPOINTS FOR Y-AXIS

++++1+++  2780 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
          2781 WINDOW 0,35,00,01
          3015 FOR I=1 TO D STEP 1
          3020  IF Y(I)<0 THEN 2845
          2021  IF Y(I)>01 THEN 9400
          2022  IF Y(I)<00 THEN 9500
          2025  MOVE @U3:X(I),Y(I)
          2035  GOSUB 3185
++++3+++  2845 NEXT I
          2846 VIEWPORT T(4),T(4)+T(5),0,T(15)
          2847 WINDOW 0,35,00,01
          2848 G$=SEG$(E$,1,3)
          2849 MOVE @U3:0,00
          2850 PRINT @U3:G$;" = ";Y(D);
          2851 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
          2852 WINDOW 0,35,00,01
          2855 GOSUB 9000
          2856 MOVE @U3:0,Y1(1)
          2857 DRAW @U3:35,Y1(1)
          2859 MOVE @U3:35,Y3(1)
          2859 DRAW @U3:0,Y3(1)
          2860 MOVE @U3:0,Y2(1)
          2861 DRAW @U3:35,Y2(1)
          2862 RETURN
          2865 MOVE @U3:0,Y1(1)
          2875 FOR I=1 TO D-1 STEP 1
          2880  IF Y1(I)<0 THEN 2900
          2885  DRAW @U3:X(I),Y1(I)
          2895  RDRAW @U3:0,Y1(I+1)-Y1(I)
          2898  GO TO 2905
++++1+++  2900  MOVE @U3:X(I+1),Y(I+1)
++++1+++  2905 NEXT I
          2915 DRAW @U3:X(D),Y1(D)
          2925 FOR I=1 TO 4
          2935  RMOVE @U3:0.5,0
          2945  RDRAW @U3:0.5,0
          2955 NEXT I

          2965 REM DO Y3

          2975 MOVE @U3:0,Y3(1)
          2985 FOR I=1 TO D-1 STEP 1
          2990  IF Y(I)<0 THEN 3015
          2995  DRAW @U3:X(I),Y3(I)
          3005  RDRAW @U3:0,Y3(I+1)-Y3(I)
          3010  GO TO 3020
++++1+++  3015  MOVE @U3:X(I+1),Y3(I+1)
++++1+++  3020 NEXT I
          3035 DRAW @U3:X(D),Y3(D)
          3035 FOR I=1 TO 4 STEP 1
          3045  RMOVE @U3:0.5,0
          3055  RDRAW @U3:0.5,0
          3065 NEXT I
```

```
         3075 REM Y2

         3085 MOVE @U3:0,Y2(1)
         3095 FOR I=1 TO D-1 STEP 1
         3100  IF Y2(I)<0 THEN 3125
         3105  RDRAW @U3:0.5,0
         3115  RMOVE @U3:0.5,Y2(I+1)-Y2(I)
         3120  GO TO 3130
+++1+++  3125  MOVE @U3:X(I+1),Y2(I+1)
+++1+++  3130 NEXT I
         3135 FOR I=1 TO 5
         3145  RDRAW @U3:0.5,0
         3155  RMOVE @U3:0.5,0
         3165 NEXT I
         3175 RETURN

-------------------------------------------------------------------------------

---1---  3185 REM$ THIS CENTERS DIAMONDS

         3200 RMOVE @U3:0,-0.01*(01-00)
         3205 RDRAW @U3:0.35,0.01*(01-00)
         3210 RDRAW @U3:-0.35,0.01*(01-00)
         3215 RDRAW @U3:-0.35,-0.01*(01-00)
         3220 RDRAW @U3:0.35,-0.01*(01-00)
         3225 RETURN
         3235 DRAW @U3:X(D),Y(D)

-------------------------------------------------------------------------------

---3---  4845 REM$    FIND/OPEN
         4855 REM* (F$,N9)

         4860 FIND @U2:0
         4865 FIND @U2:1
         4875 INPUT @U2:B$
         4885 J$=SEG(B$,1,3)
         4895 IF J$<>"IDS" THEN 5175
+++1+++  4905 INPUT @U2,6:A
         4915 IF A=1 THEN 4995
         4925 INPUT @U2:B$
         4935 DIM J$(13)
         4945 J$=SEG(B$,4,10)
         4955 F=LEN(F$)
         4965 DIM J$(F)
         4975 IF J$=F$ THEN 5035
         4985 GO TO 4905

+++1+++  4995 REM$

         5005 PRINT "ERROR **** FILE";F$;"NOT FOUND"
         5015 CLOSE
         5025 FIND 1
         5035 OLD
+++1+++  5035 J$=SEG(B$,1,3)
         5045 N9=VAL(J$)
         5050 FIND @U2:0
         5055 FIND @U2:N9
         5065 INPUT @U2:B$
         5075 DIM J$(10)
```

```
5085 J$=SEG$(D$,1,10)
5095 F=LEN(F$)
5105 DIM J$(F)
5115 IF J$<>F$ THEN 5135
5125 RETURN
5135 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
5145 PRINT "INDEX NAME =";F$;"INTERNAL NAME =";J$
5155 PRINT @U2,21
5165 FIND 1
5166 OLD
5175 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
5185 PRINT @U2,21
5195 FIND 1
5196 OLD

5405 REM*  PLOT OBSERVED DATA

5415 GOSUB 3395

6715 REM*DRAW MU

6720 SET DEGREES
6730 VIEWPORT 0,130,0,100
6740 WINDOW 0,130,0,100

6750 REM*H0 - PRINTED LINE HEIGHT
6760 REM*H1 - PRINTED CHARACTER HEIGHT
6770 REM*H2 - WIDTH OF SPACE
6780 REM*H3 - WIDTH OF A CHARACTER

6790 S0=15
6800 H0=2.82
6810 H1=1.88
6820 H2=1.79
6830 H3=1.55
6840 MOVE @U3:X0+H0/20,Y0+H2/20
6850 RDRAW @U3:H3/S0,H1*5/S0
6860 FOR I=1 TO S0/2
6870  RDRAW @U3:0,H1/S0
6880 NEXT I
6890 FOR I=1 TO S0/2
6900  RDRAW @U3:0,-H1/S0
6910 NEXT I
6920 FOR I=0 TO 180 STEP S0*3/2
6930  ROTATE I+270
6940  RDRAW @U3:H1/S0,0
6950 NEXT I
6960 FOR I=1 TO S0/2
6970  RDRAW @U3:H1/S0,0
6980 NEXT I
6990 FOR I=1 TO S0/2
7000  RDRAW @U3:-H1/S0,0
7010 NEXT I
7020 FOR I=270 TO 360 STEP S0/2*3
7030  ROTATE I
7040  RDRAW @U3:H1/S0,0
7050 NEXT I
7060 MOVE @U3:X0+H2*1.1,Y0+0.1*H0
7070 RETURN
```

```
        7999 REM*DRAW RHO

        8000 SET DEGREES
        8010 VIEWPORT 0,130,0,100
        8020 WINDOW 0,130,0,100

        8030 REM*H0 - PRINTED LINE HEIGHT
        8040 REM*H1 - PRINTED CHARACTER HEIGHT
        8050 REM*H2 - WIDTH OF SPACE
        8060 REM*H3 - WIDTH OF A CHARACTER.

        8070 MOVE @U3:X0-H1/2,Y0
        8080 FOR I=-95 TO 265 STEP 15
        8090  ROTATE I
        8100  RDRAW @U3:H3/S0*1.3,0,
        8110 NEXT I
        8120 ROTATE -5
        8130 RDRAW @U3:0,-10*H3/S0
        8140 RMOVE @U3:H3,0
        8150 RETURN

        8999 REM ROUTINE TO LABEL Y AXIS

-------------------------------------------------------------------------------
---1---  9000 REM

        9070 L$=STR(Y1(1))
        9080 GOSUB 61600
        9090 MOVE @U3:0,Y1(1)
        9100 FOR I=1 TO 00+1
        9110  PRINT @U3:"H";
        9120 NEXT I
        9130 PRINT @U3:L$;
        9140 L$=STR(Y2(1))
        9150 GOSUB 61600
        9160 MOVE @U3:0,Y2(1)
        9170 FOR I=1 TO 00+1
        9180  PRINT @U3:"H";
        9190 NEXT I
        9200 PRINT @U3:L$;
        9210 L$=STR(Y3(1))
        9220 GOSUB 61600
        9230 MOVE @U3:0,Y3(1)
        9240 FOR I=1 TO 00+1
        9250  PRINT @U3:"H";
        9260 NEXT I
        9270 PRINT @U3:L$;
        9360 RETURN

+++++++  9400 REM ROUTINE TO DRAW ARRROW POINTING UP

        9410 MOVE @U3:X(I),01
        9420 PRINT @U3:"J^";
        9430 GO TO 2045

+++++++  9500 REM ROUTINE TO DRAW UPSIDE DOWN ARROW

        9510 MOVE @U3:X(I),00
        9520 L$=CHR(127)
        9530 PRINT @U3:L$;
```

```
         9550 GO TO 2045
*****    10000 PRINT "NO GC PLOTS ARE AVAILABLE FOR PLOTTING"
         10050 FIND 1
         10060 RETURN
*****    10100 PRINT "ERROR WITH HISTORY TAPE FILE NUMBER 2"
*****    10200 FIND 1
         10201 RETURN

 ---------- ------------------------------------------------------------------------------

---3---   61600 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
         61610 REM(L$(PASSED IN CONTAINING NUMBER IN CHARACTER FORM THAT
         61620 REM      IS TO BE PRINTED OUT TO 3 DECIMAL PLACES
         61630 REM      RESULTANT STRING IS(PASSED BACK IN L$
         61640 REM      FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 6

         61650 DD=POS(L$,"E",1)
         61660 IF DD<>0 THEN 61700
         61670 L$=SEG$(L$,1,6)
         61680 DD=6
         61690 RETURN

*****    61700 REM NUMBER IS IN SCIENTIFIC NOTATION

         61710 K$=SEG$(L$,DD+1,4)
         61720 DD=VAL(K$)
         61730 IF DD>6 THEN 61880
         61740 IF DD<-4 THEN 61780
         61750 L$=" 0.000"
         61760 GO 6
         61770 RETURN
*****    61780 L$=SEG$(L$,1,1)
         61785 L$=L$+"."
         61790 FOR I=2 TO DD OF 61820,61810,61800
*****    61800 L$=L$+"0"
*****    61810 L$=L$+"0"
*****    61820 L$=L$+SEG$(L$,I,1)
         61830 L$=L$+"."
         61840 L$=L$+SEG$(L$,2,DD+1)
         61850 L$=L$+"E"
         61860 L$=L$+K$
         61870 DD=6
         61880 RETURN

*****    61890 REM SECTION TO PRINT OUT 6>0

         61900 L$=SEG$(L$,1,5)
         61910 L$=L$+"E"
         61920   +L$+$
         61930 GO RETURN(I+1)
         61940 RETURN

 THE 4 ERROR LINE NUMBERS ARE BRANCHED TO BUT DO NOT EXIST IN THIS TAPE FILE ( 0 4 )
 A "*" FOLLOWED BY THE LINE NUMBER INDICATES IT IS BRANCHED TO AS A SUBROUTINE (VIA A "GOSUB" OR "ON")
```

FILE # 5

```
10 DIM X$(4)
110 PAGE
120 PRINT
130 PRINT *                              ID SETS MANAGEMENT*
140 PRINT *JJJJJJJ*
150 PRINT *                              Programmed by*
160 PRINT *                          Computer Sciences Corporation*
170 PRINT *                              Data Systems Laboratory*
180 PRINT *                      NATIONAL SPACE TECHNOLOGY LABORATORY*
190 PRINT *                          NSTL Station, Mississippi 39529*
200 PRINT *JJJJ*
205 X$="L .1"
210 PRINT *
220 PRINT * *                            Version:  L  - Production*
230 PRINT *                                 March 10,1982*
235 PRINT *JJJJ*
240 PRINT *PRESS 'RETURN' TO CONTINUE *;
250 INPUT Q$
2000 Q1=33
2010 Q2=11
2020 GO TO 2180
2030 PAGE
2040 PRINT *EXTERNAL LABEL*;Y$;*IS NOT EQUAL TO TAPE LABEL*;A$
2050 PRINT *WOULD YOU LIKE TO STOP? (Y/N)*
2060 INPUT D$
2070 IF D$ = "Y" THEN 2100
2080 CLOSE
2090 PRINT @02,21
****** 2100 END
****** 2110 PAGE
2120 PRINT
2130 PRINT *** error *** this is not the correct tape*
2135 PRINT *PRESS 'RETURN' TO CONTINUE *;
2140 INPUT Q$
2150 GO TO 2240
****** 2160 PRINT *ENTER USER-ID*.
2170 INPUT U$
2180 PRINT *ENTER DATE  (ddmmyy)*
2190 INPUT D$
2200 PAGE
****** 2210 PRINT *INSERT IDS HISTORY TAPE IN EXTERNAL TAPE UNIT # 4924*
2220 PRINT
2230 PRINT
2240 PRINT *### ENTER EXTERNAL LABEL ON HISTORY TAPE*
2250 INPUT Z$
2260 FIND @0210
2270 FIND @0211
2280 A=LEN(Z$)
2290 INPUT @0211$ ,
2300 DIM Y$(A)
2310 IF Z$ = Y$ THEN 2120
2320 CLOSE
2330 PAGE
2340 FIND @0210
2350 FIND @0211
2360 PRINT @0210$
2370 PRINT @0211$
2380 FIND 2
```

2370 OLD

FILE # 6

```
100 U2=11
110 DATA 48
120 DATA 0.308,0.35
130 DATA 0.317,0.35
140 DATA 0.31,0.35
150 DATA 0.401,0.46
160 DATA 0.408,0.46
170 DATA 0.408,0.46
180 DATA 0.042,0.04
190 DATA 0.037,0.04
200 DATA 0.04,0.04
210 DATA 0.231,0.29
220 DATA 0.226,0.29
230 DATA 0.238,0.29
240 DATA -0.006,0
250 DATA -0.006,0
260 DATA -0.005,0
270 DATA 0.501,0.58
280 DATA 0.465,0.58
290 DATA 0.479,0.58
300 DATA 0.207,0.23
310 DATA 0.198,0.23
320 DATA 0.193,0.23
330 DATA 0.11,0.12
340 DATA 0.107,0.12
350 DATA 0.109,0.12
360 DATA 0.332,0.35
370 DATA 0.313,0.35
380 DATA 0.305,0.35
390 DATA 0.42,0.46
400 DATA 0.406,0.46
410 DATA 0.4,0.46
420 DATA 0.042,0.04
430 DATA 0.038,0.04
440 DATA 0.039,0.04
450 DATA 0.261,0.29
460 DATA 0.262,0.29
470 DATA 0.254,0.29
480 DATA 0.003,0
490 DATA 1.0E-3,0
500 DATA 6,0
510 DATA 0.535,0.58
520 DATA 0.536,0.58
530 DATA 0.523,0.58
540 DATA 0.226,0.23
550 DATA 0.212,0.23
560 DATA 0.216,0.23
570 DATA 0.117,0.12
580 DATA 0.113,0.12
590 DATA 0.116,0.12
600 PRINT "ENTER DATE (mm/dd/yy)"
610 INPUT B$
620 PRINT "ENTER HISTORY LABEL (IDSxx...x)"
630 INPUT C$
640 DIM P(34),Y0(31),W(7),M9(31),M8(31),00(31),01(31),02(31),03(31)
650 F=0
660 P(6)=1
670 P(3)=1
```

```
680 P(29)=1
690 W=0
700 Z=0
710 D7=1
720 K=0
730 X4=0
740 PRINT "INSERT NEW HISTORY TAPE IN UNIT "U2
750 PRINT "PRESS 'RETURN' TO CONTINUE"
760 INPUT Z$
770 FIND @U2:0
780 MARK @U2:1,3000
790 FIND @U2:1
800 C$=C$&R$
810 PRINT @U2:C$
820 PRINT @U2:"002SYSTEM****P"
830 PRINT @U2:"003PLOTFILES*P"
840 PRINT @U2:"004PLOTS0C***P"
850 PRINT @U2:"005HRL ******P"
860 PRINT @U2:"006HGL QL.208P"
870 PRINT @U2:"007HGL QP.208P"
880 PRINT @U2,2:
890 FIND @U2:2
900 MARK @U2:1,1000
910 FIND @U2:2
920 PRINT @U2:"SYSTEM****"
930 FIND @U2:3
940 MARK @U2:1,5000
950 FIND @U2:3
960 PRINT @U2:"PLOTFILES*"
970 FIND @U2:4
980 MARK @U2:1,5000
990 FIND @U2:4
1000 PRINT @U2:"PLOTS0C***"
1010 FIND @U2:5
1020 MARK @U2:3,5000
1030 FIND @U2:5
1040 PRINT @U2:"HRL ******P"
1050 PRINT @U2:B$,F
1060 PRINT @U2,2:
1070 DIM X(400),Y(400)

1080 REM            PRINT "ENTER TRUE VS FOUND DATA FOR A="

1090 F=0
1100 W1=0
1110 P(7)=0
1120 READ P(8)
1130 DIM X(P(8)),Y(P(8))
1150 FOR I=1 TO P(8)
1160  READ Y(I),X(I)
1170 NEXT I
1180 M1=0
1190 M2=0
1200 M3=0
1210 M4=0
1220 M5=0
1230 W=0
1235 W0=1
1240 FOR I=1 TO P(8)
1260  M1=M1+X(I)*W0
```

```
1270  M2=M2+Y(I)*W0
1280  M3=M3+X(I)*X(I)*W0
1290  M4=M4+Y(I)*Y(I)*W0
1300  M5=M5+Y(I)*X(I)*W0
1310  W1=W1+W0
1320 NEXT I
1330 C=W1*M3-M1*M1
1340 P(10)=W1/C
1350 P(11)=-M1/C
1360 P(12)=M3/C
1370 P(2)=(W1*M5-M1*M2)/(W1*M3-M1*M1)
1380 P(1)=(M2-P(2)*M1)/W1
1390 P(4)=P(1)
1400 P(5)=P(2)
1410 D=0
1420 FOR I=1 TO P(8)
1430  D=D+(Y(I)-P(1)-P(2)*X(I))^2
1440 NEXT I
1450 P(23)=1-D/(M4-M2*M2/P(8))
1460 P(3)=2
1470 P(6)=D/(P(8)-2)
1480 P(9)=1
1490 P(29)=1
1500 P(27)=P(6)
1510 FIND @02:5
1520 PRINT @02:"HRL ******P"
1530 PRINT @02:B$,P
1540 PRINT @02,2:
1550 FIND @02:6

1560 REM    PRINT "ENTER OL HISTORY FOR .288"
1570 REM##   PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR .288"

1580 M1=0.288

1590 REM##    PRINT "ENTER S.D.(OR STANDARD) FOR .288"

1600 M2=0.013

1610 REM###   PRINT "ENTER LOWER LIMIT FOR ACCURACY"

1620 I=0.264
1630 00=I

1640 REM##  PRINT "ENTER UPPER LIMIT FOR ACCURACY"

1650 I=0.312
1660 01=I

1670 REM##   PRINT "ENTER LOWER LIMIT FOR PRECISION"

1680 I=0
1690 02=I

1700 REM###     PRINT "ENTER UPPER LIMIT FOR PRECISION"

1710 I=0.029
1720 03=I
1730 B7=31
1740 K=0
```

```
1750 X0=0
1760 W=0
1770 Z=0
1780 M9=M1
1790 M8=M2
1800 PRINT @U2:"HQL QL.288*"
1810 PRINT @U2:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
1820 FIND @U2;7

1830 REM###   PRINT "ENTER QP HISTORY  R .289"*
1840 REM##   PRINT "ENTER MEAN (OR STANDARD) FOR .288"

1850 M1=0.288

1860 REM###   PRINT "ENTER S.D.(OR STANDARD) FOR .288"

1870 M2=0.017

1880 REM##    PRINT "ENTER LOWER LIMIT FOR ACCURACY"

1890 I=0.256
1900 00=I

1910 REM###   PRINT "ENTER UPPER LIMIT FOR ACCURACY"

1920 I=0.32
1930 01=I

1940 REM###   PRINT "ENTER LOWER LIMIT FOR PRECISION"

1950 I=0
1960 02=I

1970 REM###    PRINT "ENTER UPPER LIMIT FOR PRECISION"

1980 I=0.039
1990 03=I
2000 M9=M1
2010 M8=M2
2020 PRINT @U2:"HQL QP.288*"
2030 PRINT @U2:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
2040 PRINT @U2,2:
2050 CLOSE
2060 FIND 1
2070 OLD

2080 REM END OF PROGRAM
```

FILE # 7

```
100 INIT
110 PRINT @32,26:0

120 REM
130 REM THIS PROGRAM IS SUPPOSED TO UPDATE THE HISTORY FILE BETWEEN
140 REM EACH DAILY RUN.  IT IS SUPPOSED TO LEAVE IN THE INFORMATION
150 REM ABOUT PREVIOUS DAYS SO THAT THE QC PLOTS WILL SHOW DAILY
160 REM PROGRESS.  IT IS SUPPOSED TO REMOVE THE INDIVIDUAL PLOT FILES
170 REM SO THAT A "FRESH" HISTORY TAPE EACH DAY.
180 REM
190 REM   DATE:  05/04/81
200 REM AUTHOR:  COMPUTER SCIENCES CORPORATION
210 REM          ISAAC WILLY TRAXLER
220 REM          NSTL STATION, MS
230 REM
240 REM
250 REM DO SOME PRELIMINARIES

260 U1=33
270 PAGE
280 PRINT " BEGIN PROGRAM TO UPDATE HISTORY TAPE"
290 PRINT " INSERT HISTORY TAPE INTO INTERNAL TAPE DRIVE"
300 PRINT " MAKE SURE WRITE PROTECT IS NOT ON SAFE"
310 PRINT " PRESS HOME PAGE TO START PROGRAM"
320 PRINT "2KJ"
330 PRINT " BEGIN PROCESSING"

340 REM  U1 - DEVICE NUMBER OF INTERNAL TAPE DRIVE
350 REM  A$ - LINE 1 OF FILE 1
360 REM  B$ - LINE 2 OF FILE 1
370 REM  C$ - LINE 3 OF FILE 1
380 REM  D$ - LINE 4 OF FILE 1
390 REM  E$ - LINE 5 OF FILE 1
400 REM  F$ - LINE 6 OF FILE 1
410 REM  G$ - LINE 7 OF FILE 1
420 REM  I  - USED AS A TEMPORARY INDEX VARIABLE
430 REM
440 REM    *** SECTION TO UPDATE FILE 1 ***

450 FIND 1
460 INPUT @U1:A$
470 INPUT @U1:B$
480 INPUT @U1:C$
490 INPUT @U1:D$
500 INPUT @U1:E$
510 INPUT @U1:F$
520 INPUT @U1:G$
530 CLOSE
540 FIND 1
550 PRINT @U1:A$
560 PRINT @U1:B$
570 PRINT @U1:C$
580 PRINT @U1:D$
590 PRINT @U1:E$
600 PRINT @U1:F$
610 PRINT @U1:G$
620 CLOSE
```

```
630 REM  END OF FILE 1 SECTION
640 REM PUT TAPE AT BEGINNING OF FILE

650 FIND 0

660 REM  *** SECTION FOR FILE 2 ***

670 FIND 2
680 PRINT @U1:":SYSTEM****"
690 CLOSE

700 REM  *** END OF FILE 2 SECTION ***
710 REM  FIND BEGINNING OF TAPE

720 FIND 0

730 REM  *** SECTION FOR FILE 3 ***

740 FIND 3
750 PRINT @U1:"PLOTFILES*"
760 CLOSE

770 REM  *** END OF SECTION FOR FILE 3 ***
780 REM FIND BEGINNING OF TAPE

790 FIND 0

800 REM  *** SECTION FOR FILE 4 ***

810 FIND 4
820 PRINT @U1:"PLOTSQC***"
830 CLOSE
840 PRINT
850 PRINT
860 PRINT
870 PRINT
880 PRINT
890 PRINT "TAPE PROCESSING FINISHED"
900 PRINT
910 PRINT "YOU MAY REMOVE THE TAPE NOW"
920 PRINT
930 PRINT "INSERT STATISTICS PROGRAM TAPE INTO INTERNAL TAPE DRIVE"
940 PRINT "PRESS 'HOME PAGE' TO CONTINUE"
950 PRINT "CKJ"
960 FIND 1
970 OLD

980 REM END OF PROGRAM
```

FILE # 8

```
100 INIT
110 DATA 33,11,32
120 READ U1,U2,U3
130 DIM D$(8),U$(8)
140 DIM T7(40)
150 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
160 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
170 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
180 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2.023,2.022
190 READ T7
200 FIND @U2:0
210 FIND @U2:2
220 INPUT @U2,6:A
230 IF A=1 THEN 2050
240 INPUT @U2:U$,D$
250 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
260 PRINT @U3,17:4

270 REM*
280 REM* GET LIST OF FILES TO BE PLOTTED
290 REM*

300 F$="PLOTFILES"
310 GOSUB 3620
320 I=0
330 I=I+1
340 INPUT @U2,6:A
350 IF I=1 AND A=1 THEN 2060
360 INPUT @U2:N1(I)
370 INPUT @U2,6:T1(2)
380 IF T1(2)=2 THEN 330
390 T1(1)=I

400 REM*
410 REM* START PLOT LOOP
420 REM*

430 FOR I9=1 TO T1(1)
440  FIND @U2:0
450  FIND @U2:N1(I9)
460  INPUT @U2:Z$
470  INPUT @U2:L$
480  INPUT @U2:X$
490  INPUT @U2:Y$
500  INPUT @U2:A$
510  INPUT @U2:D$
520  INPUT @U2:P
523  IF I9<>1 THEN 530
526  OO=P(3)
530  IF P(8)=0 THEN 2040
535  DELETE X,Y
540  DIM X(P(8)),Y(P(8))
550  N=P(8)
560  INPUT @U2:X,Y

570  REM*
580  REM* SET DEFAULT PLOT PARAMETER
590  REM*
```

```
600  REM T(4)-MIN X VALUE OF GRAPH      T(5)-LENGTH OF X AXIS
610  REM T(14)-MIN Y VALUE              T(15)-LENGTH OF Y AXIS

620  VIEWPORT 0,130,0,100
630  WINDOW 0,130,0,100
640  I=0
650  T(1)=P(8)
660  T(2)=2
670  T(3)=4
680  T(4)=10
690  T(5)=70
700  T(8)=1
710  T(9)=1
720  T(14)=25
730  T(15)=70
740  T(18)=1
750  T(19)=1

760  REM LABEL PLOT
770  REM TITLE GRAPH

780  X0=T(5)/2+T(4)-LEN(L$)*7/8
790  Y0=97
800  PAGE
810  MOVE @U3:X0,Y0
820  PRINT @U3:L$

830  REM DUMP X AXIS TITLE

840  X0=T(5)/2+T(4)-LEN(X$)*7/8
850  Y0=T(14)-10
860  MOVE @U3:X0,Y0
870  PRINT @U3:X$

880  REM DUMP Y AXIS LABEL

890  X0=3
900  Y0=T(15)/2+T(14)+LEN(Y$)*10/7
910  MOVE @U3:X0,Y0
920  PRINT @U3:" "
930  FOR Z=1 TO LEN(Y$)
940   Z$=SEG(Y$,Z,1)
950   PRINT @U3:Z$
960  NEXT Z

970  REM DISPLAY INFO ON RIGHT SIDE OF PLOT

980  X0=T(4)+T(5)+5
990  Y0=T(14)+T(15)-2
1000  MOVE @U3:X0,Y0
1010  PRINT @U3:"AGENT: ";A$
1020  Y0=Y0-3
1030  MOVE @U3:X0,Y0
1040  PRINT @U3:"DATE: ";D$
1050  Y0=Y0-6
1060  MOVE @U3:X0,Y0
1070  PRINT @U3:"STATISTICS"
1080  MOVE @U3:X0,Y0-0.5
1090  PRINT @U3:"----------"
1100  Y0=Y0-4
```

```
          1110  T9=2
          1120  IMAGE FA,2D.3D,FA,S
          1130  Y0=Y0-3
          1140  MOVE @U3:X0,Y0
          1150  PRINT @U3:"BARTLETTS:"
          1160  Y0=Y0-3
          1170  MOVE @U3:X0+T9,Y0
          1180  PRINT @U3: USING 1120:"";P(14);""
          1190  IF P(20)=0 THEN 1210
          1200  PRINT @U3: USING 1120:"/";P(20);""
++++++    1210  Y0=Y0-3
          1220  IMAGE FA,2D.3D
          1230  MOVE @U3:X0,Y0
          1240  PRINT @U3:"R-SQUARED:"
          1250  Y0=Y0-3
          1260  MOVE @U3:X0+T9,Y0
          1270  PRINT @U3: USING 1220:"";P(23)
          1280  IMAGE FA,3E
          1290  Y0=Y0-3
          1300  MOVE @U3:X0,Y0
          1310  PRINT @U3:"MSE:"
          1320  Y0=Y0-3
          1330  MOVE @U3:X0+T9,Y0
          1340  PRINT @U3: USING 1280:"";P(27)
          1350  Y0=Y0-6
          1360  MOVE @U3:X0,Y0
          1370  PRINT @U3:"PARAMETERS"
          1380  MOVE @U3:X0,Y0-0.5
          1390  PRINT @U3:"----------"
          1400  Y0=Y0-4
          1410  IMAGE FA,3D.2D,FA,2D.3D,FA,S
          1420  MOVE @U3:X0,Y0
          1430  GO TO P(3) OF 1480,1450,1510

          1440  REM   case 2    Y=ln(Y)

++++++    1450  PRINT @U3:"ln(Y)=a+bX"
          1460  GO TO 1520

          1470  REM   case 1    X=ln(X)

++++++    1480  PRINT @U3:"Y=a+b ln(X)"
          1490  GO TO 1520

          1500  REM   case 3    no transform

++++++    1510  PRINT @U3:"Y=a+bX"
++++++    1520  Y0=Y0-3
          1530  MOVE @U3:X0+T9,Y0
          1540  PRINT @U3: USING 1280:"a= ";P(4)
          1550  Y0=Y0-3
          1560  MOVE @U3:X0+T9,Y0
          1570  PRINT @U3: USING 1280:"b= ";P(5)
          1580  IF P(7)=0 THEN 1720
          1590  Y0=Y0-3
          1600  MOVE @U3:X0+T9,Y0
          1610  MOVE @U3:X0,Y0
          1620  PRINT @U3:"S(X) = c(X + e)^d"
          1630  Y0=Y0-3
          1640  MOVE @U3:X0+T9,Y0
```

```
          1650  PRINT @U3; USING 1280;"c= ",P(6)
          1660  Y0=Y0-3
          1670  MOVE @U3;X0+T9,Y0
          1680  PRINT @U3; USING 1280;"d= ",P(7)
          1690  Y0=Y0-3
          1700  MOVE @U3;X0+T9,Y0
          1710  PRINT @U3; USING 1280;"e = ",P(30)
+++1+++   1720  Y0=Y0-3
          1730  MOVE @U3;X0,Y0
          1732  IF P(3)<>2 THEN 1740
          1734  PRINT @U3;"Y' = f - Y"
          1736  GO TO 1750
++++1+++  1740  PRINT @U3;"Y' = (Y + f)^g"
++++1+++  1750  Y0=Y0-3
          1760  MOVE @U3;X0,Y0
          1770  PRINT @U3;"X' = X + h"
          1780  Y0=Y0-3
          1790  MOVE @U3;X0+T9,Y0
          1800  PRINT @U3; USING 1280;"f = ",P(31)
          1810  Y0=Y0-3
          1820  MOVE @U3;X0+T9,Y0
          1825  IF P(3)=2 THEN 1850
          1830  PRINT @U3; USING 1280;"g = ",P(29)
          1840  Y0=Y0-3
++++1+++  1850  MOVE @U3;X0+T9,Y0
          1860  PRINT @U3; USING 1280;"h = ",P(32)
          1870  MOVE @U3;T(4)+T(5),T(14)
          1880  DRAW @U3;T(4)+T(5),T(14)+T(15)
          1890  DRAW @U3;T(4),T(14)+T(15)
          1900  GOSUB 4000
          1910  IF U3=1 THEN 1980
          1920  PRINT "CLS"
          1930  PRINT "DO YOU WANT A PLOTTER PLOT OF THIS PLOT? (Y/N)"
          1940  INPUT B$
          1950  IF B$<>"Y" THEN 1980
          1960  U3=10
          1970  GO TO 620
++++2+++  1980  U3=32
          1990  GO TO 2000
++++1+++  2000 NEXT I9

          2010 REM

          2020 FIND 4
          2030 OLD
++++1+++  2040 PRINT "NO DATA SETS FOUND ON THIS TAPE "
++++1+++  2050 END
++++1+++  2060 PRINT "THERE ARE NO PLOT FILES CURRENTLY QUEUED TO BE PRINTED"
          2070 END

          2080 REM*
          2090 REM* PLOT SUBROUTINES
          2100 REM*
-----------------------------------------------------------------------------
---1---   2110 REM*

          2120 U9=4
          2130 GOSUB 3160
          2140 U9=14
```

```
          2150 GOSUB 3160
          2160 U0=4
          2170 Y0=Y0-5
          2180 MOVE @U3:X0,Y0
          2190 PRINT @U3:"SCALE FACTORS:";
          2200 MOVE @U3:X0,Y0-0.5
          2210 PRINT @U3:"------ -------"
          2220 Y0=Y0-4
          2230 MOVE @U3:X0,Y0
          2240 PRINT @U3:"X axis: 10^";X2
          2250 Y0=Y0-3
          2260 MOVE @U3:X0,Y0
          2270 PRINT @U3:"Y axis: 10^";Y2
          2280 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
          2290 WINDOW T(6),T(6)+T(7),T(16),T(16)+T(17)
          2300 AXIS @U3:T(8),T(18)
          2310 J=1
          2320 K2=T(18)/(T(17)/T(15))
          2330 K3=T(14)
+++1+++   2340 U$=STR$(T(16)+(J-1)*T(18))
          2350 PRINT @U3,21:0 MAX T(4)-(LEN(U$)+1)*1.78,K3-0.89
          2360 PRINT @U3:U$;
          2370 IF J>T(19) THEN 2410
          2380 K3=K3+K2
          2390 J=1+J
          2400 GO TO 2340
+++1+++   2410 K2=T(8)/(T(7)/T(5))
          2420 K3=T(4)
          2430 J=1
+++1+++   2440 U$=STR$(T(6)+(J-1)*T(8))
          2450 PRINT @U3,21:0 MAX K3-(LEN(U$)+1)*1.78*0.5,T(14)-4
          2460 PRINT @U3:U$;
          2470 IF J>T(9) THEN 2510
          2480 K3=K3+K2
          2490 J=1+J
          2500 GO TO 2440
+++1+++   2510 FOR J=1 TO T(1)
          2520  IF T(2)<>1 THEN 2540
          2530  IF J>1 THEN 2560
+++1+++   2540  MOVE @U3:X(J),Y(J)
          2550  GO TO 2570
+++1+++   2560  DRAW @U3:X(J),Y(J)
+++1+++   2570  GOSUB 2600
          2580 NEXT J
          2590 RETURN

-------------------------------------------------------------------------------
---1---   2600 S2=T(14+3)/T(14+1)*0.75
          2610 S1=T(4+3)/T(4+1)*0.75
          2620 GO TO T(3) OF 2910,2640,2700,2770,2840
          2630 GO TO 2910
+++1+++   2640 RMOVE @U3:0,S2
          2650 RDRAW @U3:S1,-2*S2
          2660 RDRAW @U3:-2*S1,0
          2670 RDRAW @U3:S1,2*S2
          2680 RMOVE @U3:0,-S2
          2690 RETURN
+++1+++   2700 RDRAW @U3:0,S2
          2710 RDRAW @U3:0,-2*S2
          2720 RDRAW @U3:0,S2
```

```
          2730 KDRAW @U3:-S1,0
          2740 KDRAW @U3:2*S1,0
          2750 KDRAW @U3:-S1,0
          2760 RETURN
+++1+++   2770 KMOVE @U3:S1,S2
          2780 KDRAW @U3:0,-2*S2
          2790 KDRAW @U3:-2*S1,0
          2800 KDRAW @U3:0,2*S2
          2810 KDRAW @U3:2*S1,0
          2820 KMOVE @U3:-S1,-S2
          2830 RETURN
+++1+++   2840 KMOVE @U3:0,S2
          2850 KDRAW @U3:S1,-S2
          2860 KDRAW @U3:-S1,-S2
          2870 KDRAW @U3:-S1,S2
          2880 KDRAW @U3:S1,S2
          2890 KMOVE @U3:0,-S2
          2900 RETURN
+++2+++   2910 IF T(2)=1 THEN 2930
          2920 KDRAW @U3:0,0
+++1+++   2930 RETURN

---1---   2940 Y2=0
+++1+++   2950 T(16)=10^39
          2960 T(17)=-T(22)
          2970 FOR J=1 TO T(1)
          2980   T(16)=T(16) MIN Y(J)
          2990   T(17)=T(17) MAX Y(J)
          3000 NEXT J
          3010 T9=T(17)-T(16)
          3020 T(17)=T9*(T9<0)+(T9=0)
          3030 IF T9=1 THEN 5300
          3040 RETURN

---1---   3050 X2=0
+++1+++   3060 T(6)=10^39
          3070 T(7)=-T(12)
          3080 FOR J=1 TO T(1)
          3090   T(6)=T(6) MIN X(J)
          3100   T(7)=T(7) MAX X(J)
          3110 NEXT J
          3120 T9=T(7)-T(6)
          3130 T(7)=T9*(T9<0)+(T9=0)
          3140 IF T9=1 THEN 5350
          3150 RETURN

---2---   3160 DIM S0(5)
          3170 S0(3)=INT(LOG(T(U9+1)/15)
          3180 S0(3)=(T(U9+1)/15<10^S0(3))
          3190 S0(4)=INT(ABS(LOG(S0(3)))+SGN(LOG(S0(3)))
          3200 S0(4)=(S0(4)=INT(10^S0(4)+1.0E-4)
          3210 IF S0(4)<0 THEN 3250
          3220 S0(2)=1
          3230 S0(4)=1
          3240 GO TO 3300
+++1+++   3250 S0(2)=S0(3)/S0(4)
          3260 S0(3)=S0(4)*10
```

```
        3270 IF S0(5)=-10 THEN 3290
        3280 S0(3)=S0(4)*5
***1***  3290 IF S0(5)= 5 THEN 3310
        3300 S0(3)=S0(4)*2
***1***  3310 IF S0(5)= 2 THEN 3330
        3320 S0(3)=S0(4)
***2***  3330 S0(5)=T(U9+2)/S0(3)
        3340 IF S0(5)= 0 THEN 3360
        3350 S0(5)=S0(5)-0.9999
***1***  3360 S0(1)=S0(3)*(INT(ABS(S0(5)))*SGN(S0(5)))
        3370 S0(5)=(T(U9+3)+T(U9+2))/S0(3)
        3380 IF S0(5)=0 THEN 3400
        3390 S0(5)=S0(5)+0.9999
***1***  3400 S0(2)=S0(2)*(INT(ABS(S0(5)))*SGN(S0(5)))
        3410 S0(5)=S0(2)-S0(1)
        3420 S0(4)=INT(INT(ABS(S0(5)))*SGN(S0(5))/S0(3))
        3430 IF S0(5)= 1 THEN 3460
        3440 S0(3)=S0(5)
        3450 S0(4)=1
***1***  3460 IF S0(3)=>1 THEN 3490
        3470 S0(3)=S0(5)
        3480 S0(4)=1
***1***  3490 T(U9+2)=S0(1)
        3500 T(U9+3)=S0(2)-S0(1)
        3510 T(U9+4)=S0(3)
        3520 T(U9+5)=S0(4)
        3530 T(U9+6)=1.75*T(U9+3)/T(U9+1)
        3540 RETURN
-------------------------------------------------------------------------------

  -1---  3600 FEM     FIND/OPEN
        3610 FEM$ (F$,N9)

        3620 FIND 90210
        3630 FIND 90211
        3640 INPUT 90210$
        3650 J$=SEG(B$,1,3)
        3660 IF J$<>"IC5" THEN 3970
***1***  3670 INPUT 90216
        3680 IF N=1 THEN 3700
        3690 INPUT 90210$
        3700 DIM J$(10)
        3710 J$=SEG(B$,4,10)
        3720 F=LEN(F$)
        3730 DIM J$(F)
        3740 IF J$=F$ THEN 3820
        3750 GO TO 3590

***1***  3760 FEM$

        3770 PRINT "ERROR **** FILE";F$;"NOT FOUND"
        3780 CLOSE
        3790 END
***1***  3800 I = I+(SEG$(B$,1,3)
        3810 IF I=0 THEN 3210
        3820 FIND 90210
        3830 FIND 90159
        3840 INPUT 90210$
        3850 DIM J$(10)
```

```
            3000 J$=SEG(D$,I,10)
            3020 F=LEN(F$)
            3030 DIM B$(F)
            3040 IF J$=F$ THEN 3930
            3050 RETURN
!!!!!!!     3060 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
            3070 PRINT "INDEX NAME ="F$"INTERNAL NAME ="J$
            3080 PRINT @02,23
            3090 END
!!!!!!!     3100 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
            3110 PRINT @02,23
            3120 END
```

```
---1---     4000 REM*  PLOT DATA,CURVE AND CONFIDENCE LIMITS

            4010 GOSUB 2940
            4020 GOSUB 3050

            4050 REM* ADJUST X RANGE

            4060 T(6)=T(6)-0.1*T(7)
            4070 T(6)=T(6) MAX 0.01*T(7)
            4080 T(7)=T(7)*1.2

            4090 REM*  ADJUST Y-RANGE

            4100 T(16)=T(16)-0.05*T(17)
            4110 T(16)=T(16) MAX 0.01*T(17)
            4120 T(17)=T(17)*1.1

            4130 REM*  PLOT OBSERVED DATA

            4140 GOSUB 2110

            4150 REM*
            4160 REM*  DRAW @03:UPPER AND LOWER CONFIDENCE LIMITS
            4170 REM*
            4180 REM    T(16)=T(16)+0.01*T(17)

            4190 Y0=T(16)
            4200 GOSUB 4820
            4220 MOVE @03:X0*10^-X2,T(16)*10^-Y2
            4230 FOR Y5=T(16) TO T(16)+T(17) STEP T(17)/100
            4240   Y0=Y5
            4250   GOSUB 4820
            4260   DRAW @03:X0*10^-X2,Y5*10^-Y2
            4270 NEXT Y5
            4290 Y0=T(16)
            4300 GOSUB 4820
            4310 Y0=T(16)
            4320 D=T(16)
            4330 GOSUB 4450
            4340 MOVE @03:L0*10^-X2,T(16)*10^-Y2
            4350 L=L0*10^2
            4360 D=.10000
            4370 FOR Y5=(T(16)-T(17))*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
            4380   IF P(3)=2 AND Y5=>P(31) THEN 4470
            4390   Y0=Y5
```

```
          4400  GOSUB 4820
          4410  Y0=Y5
          4420  GOSUB 4950
          4430  DRAW @U3:L0*10^-X2,Y5*10^-Y2
          4450  IF L0 0 THEN 4470
          4460  D8=U0
+++2+++   4470 NEXT Y5
          4480 Y0=T(16)
          4490 GOSUB 4820
          4500 Y0=T(16)
          4510 GOSUB 4950
          4520 MOVE @U3:U0*10^-X2,T(16)*10^-Y2
          4540 FOR Y5=(T(16)-T(17))*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
          4550  IF P(3)=2 AND Y5=>P(31) THEN 4620
          4560  Y0=Y5
          4570  GOSUB 4820
          4580  Y0=Y5
          4590  GOSUB 4950
          4610  DRAW @U3:U0*10^-X2,Y5*10^-Y2
+++1+++   4620 NEXT Y5
          4630 T4=10000
          4640 FOR T5=1 TO N
          4650  IF X(T5)<=0 THEN 4670
          4660  T4=T4 MIN X(T5)*10^X2
+++1+++   4670 NEXT T5
          4680 IF D8>T4 THEN 4700
          4690 D8=T4
+++1+++   4700 VIEWPORT 0,130,0,100
          4710 WINDOW 0,130,0,100

          4720 REM$$  X$="DETECTION LIMIT IS "
          4723 REM$$$     IF D8<>10000 THEN 4730

          4725 X$=" "

          4726 REM$$$$  X$="WARNING - Detection Limit EGRGRGOGR"

          4728 GO TO 4770
          4730 Y$=STR(D8)
          4740 Y0=POS(Y$,".",1)
          4750 Y$=SEG(Y$,1,Y0+2)
          4760 X$=X$+Y$
+++1+++   4770 X0=T(5)/2+T(4)-LEN(X$)*7/8
          4780 Y0=T(14)-14
          4790 MOVE @U3:X0,Y0
          4800 PRINT @U3:X$
          4802 Y0=Y0-3
          4803 Y$=STR(D0)
          4804 X$="Calibration Curve @ "+Y$
          4806 X0=T(5)/2+T(4)-LEN(X$)*7/8
          4808 MOVE @U3:X0,Y0
          4809 PRINT @U3:X$
          4810 RETURN
```

```
---6---    4820 REM$
          4830 REM*  SOLVE LINEAR REGRESSION IN REVERSE FOR X0
          4840 REM*  (Y0;X0)
          4850 REM* TRANSFORM Y0
```

```
         4855 IF P(3)=2 AND Y0=>P(31) THEN 4932
         4860 Y0=(Y0+P(31))^P(29)
         4870 IF P(3)<>2 THEN 4890
         4880 Y0=LOG(2*P(31)-Y0)
+++1+++  4890 X0=(Y0-P(1))/P(2)
         4900 IF P(3)<>1 THEN 4920
         4910 X0=EXP(X0)
+++1+++  4920 X0=X0+P(32)
         4930 RETURN
+++1+++  4932 X0=-50
         4934 RETURN

         4940 REM*

-------------------------------------------------------------------------------
---4---   4950 REM$
         4960 REM*      SOLVE LINEAR REGRESSION IN REVERSE FOR
         4970 REM*          UPPER AND LOWER CONFIDENCE LIMITS
         4980 REM*          (Y0,X0;L0,U0)
         4990 REM*     T-VALUES   L=.025    U=.975
         4991 REM  L0 is the lower curve if slope is positive
         4992 REM  U0 is the upper curve if slope is positive
         4993 REM  L0 is the upper curve if slope is negative
         4994 REM  U0 is the lower curve if slope is negative

         5000 T3=0
         5010 U0=0

         5020 REM* Power Transform

         5030 Y0=(Y0+P(31))^P(29)

         5040 REM Functional Transform

         5050 IF P(3)<>2 THEN 5070
         5060 Y0=LOG(2*P(31)-Y0)
+++1+++  5070 T3=T7(N-2)^2*P(6)
         5080 A1=P(2)^2-P(10)*T3
         5090 B1=P(2)*(Y0-P(1))-P(11)*T3
         5100 A2=(X0+P(30))^P(7)+P(12)
         5110 B2=Y0-P(1)
         5120 A3=T3*P(11)^2-T3*P(10)*A2+P(2)^2*A2+P(10)*B2^2-2*P(2)*P(11)*B2
         5121 IF A3=>0 THEN 5130

         5122 REM    ERROR ROUTINE

         5123 U0=100
         5124 L0=100
         5126 RETURN

         5127 REM

+++1+++  5130 B3=T7(N-2)*SQR(A3*P(6))
         5140 X0=(B1+B3)/A1

         5150 REM Inverse Functional Transform

         5160 IF P(3)<>1 THEN 5180
         5170 X0=EXP(X0)
```

```
+++1+++  5180 U0=X0-P(32)
         5190 X0=(H1-B3)/A1

         5200 REM*    Inverse Functional transform

         5210 IF P(3)<>1 THEN 5230
         5220 X0=EXP(X0)
+++1+++  5230 L0=X0-P(32)
         5280 RETURN

         5290 REM scale X & Y for plot

+++1+++  5300 FOR J=1 TO T(1)
         5310  Y(J)=10*Y(J)
         5320 NEXT J
         5330 Y2=Y2-1
         5340 GO TO 2950
+++1+++  5350 FOR J=1 TO T(1)
         5360  X(J)=10*X(J)
         5370 NEXT J
         5380 X2=X2-1
         5390 GO TO 3060
```

H

FILE # 1

```
+++++++  100 INIT
         110 U3=32
         120 PRINT @U3,26;0
         130 PAGE
         140 PRINT "JJ"
         150 PRI "       S T A T I S T I C S   P R O G R A M   D I R E C T O R Y"
         160 PRI "       - - - - - - - - - - - - - - - - - - - - - - - - - - - -"
         170 PRINT "JJOPTION                          FUNCTION"
         180 PRINT "------                          --------"
         190 PRINT "J    1       CREATE A NEW HISTORY TAPE"
         200 PRINT "     2       REFRESH HISTORY TAPE"
         210 PRINT "     3       RUN STATISTICS PROGRAMS"
         220 PRINT "     4       STOP"
         230 PRINT "JJJJ     WHICH OPTION>  (1,2,3,4)"
+++++++  240 INPUT A$
         250 IF A$="" THEN 240
         260 A=VAL(A$)
         270 IF A<1 OR A>4 THEN 100
         280 A=INT(A)
         290 GO TO A OF 300,400,500,600
+++++++  300 FIND 0
         310 FIND 6
         320 OLD
+++++++  400 FIND 0
         410 FIND 7
         420 OLD
+++++++  500 FIND 0
         510 FIND 5
         520 OLD
+++++++  600 END
```

FILE # 2

```
          4 INIT
          5 PRINT @32,26;0
          10 U1=33
          11 U2=11
          12 FIND @U2;0
          13 FIND @U2;7
          15 INPUT @U2,Z$,D$
          27 DIM Z$(25),O$(20),C$(2),F$(10),E$(72),T$(127),B$(127)
          28 DIM M$(6),Y$(30),X$(30),R$(2),A$(6),N$(1),S$(1),W$(7)
          29 R$=" "
          100 DIM X1(32),Y1(32),X2(32),Y2(32),N2(32),G6(32),N0(8),P(34),B7(32)
          110 DIM S(8),M6(8),M7(8),M8(8),M9(8),P0(34)
          200 DIM T7(40)
          210 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
          220 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2,08
          230 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
          240 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2.023,2.022
          250 READ T7
          255 E$=" "
          260 FOR I=1 TO 71
          270  E$=E$&" "
          280 NEXT I

          301 REM*
          302 REM*INITIALIZE PLOTFILES
          303 REM*

          304 F$="PLOTFILES"
          305 GOSUB 60000
          306 FIND @U2;09
          307 PRINT @U2;F$
          308 PRINT @U2,2;

          309 REM* INITIALIZE PLOT FILES

          310 F$="PLOTSOC"
          311 GOSUB 60000
          313 FIND @U2;N9
          314 PRINT @U2;F$
          315 PRINT @U2,2;
          319 PRINT "GGGGGGG"
+++2+++   320 PRINT "INSERT RMA TAPE IN 4051"
          325 PRINT "ENTER THE LABEL ON THE RMA DATA TAPE"
          330 INPUT Z$
          340 FIND @U1;1
          350 A=TYP(0)
          360 IF A=1 THEN 320
          370 INPUT @U1;Y$
          380 IF LEN(Z$)<13 THEN 403
          390 DIM Z$(13),Y$(13)
          400 IF Y$=Z$ THEN 410
          401 PRINT "LABEL ON TAPE IS "&Y$
+++1+++   403 PRINT "WRONG RMA TAPE OR WRONG LABEL GGGGGGGGGGGGGGGGGGGGGGGGGG"
          405 PAGE
          406 GO TO 320
+++1+++   410 INPUT @U1;B$
          420 M$=SEG(B$,18,2)
          430 PRINT "DATA IS BEING PROCESSED"
```

```
          440 GOSUB 1000
          450 PRINT "GGGGGGGG"
          470 PRINT "INSERT PROGRAM TAPE IN 4051"
          480 PRINT "ZKJ"
          490 FIND @U1:3
          500 OLD
-------------------------------------------------------------------------------

---1---   1000 REM*
          1010 REM*    PROGRAM FOR H ONLY
          1020 REM*

          1030 PRINT "THIS PROGRAM PROCESSES AGENT H ONLY"
          1040 N$="H "

          1050 REM PRINT "ENTER THE SERIAL NUMBER (n)"
          1060 REM INPUT N$
          1080 REM PRINT "ENTER THE ANALYST'S INITIALS (aaa)"
          1090 REM INPUT V$

          1092 N$="  "
          1094 V$="   "

          1110 REM* PROCESS CALIBRATION DATA FIRST

          1120 FIND @U1:1
          1130 INPUT @U1:B$
          1135 N=0
+++1+++   1140 A=TYP(0)
          1150 IF A<>2 THEN 1290
          1160 INPUT @U1:X$
          1170 GOSUB 5000
          1180 IF A<>1 THEN 1280
          1190 X$=SEG(B$,27,7)
          1200 C$=SEG(X$,1,2)
          1210 IF C$="NA" THEN 1280
          1215 N=N+1
          1220 X1(N)=VAL(X$)
          1230 Y$=SEG(B$,48,7)
          1240 Y1(N)=VAL(Y$)
+++2+++   1280 GO TO 1140

+++1+++   1290 REM* END OF DATA FOR CALIBRATION

          1300 PRINT "PROCESSING CALIBRATION DATA FOR H"
          1305 P=0
          1310 GOSUB 3000
          1315 GOSUB 20000
          1320 GOSUB 25000
          1330 P(13)=C0,
          1340 P(14)=A1
          1500 M1=0
          1590 M2=0
          1600 M3=0
          1610 M4=0
          1620 M5=0
          1625 P(8)=N
          1630 FOR I=1 TO P(8)
          1640  M1=M1+X1(I)
```

```
1650  M2=M2+Y1(I)
1660  M3=M3+X1(I)*X1(I)
1670  M4=M4+Y1(I)*Y1(I)
1680  M5=M5+Y1(I)*X1(I)
1690 NEXT I
1700 C=P(8)*M3-M1^2
1710 P(10)=P(8)/C
1720 P(11)=M1/C
1730 P(12)=M3/C
1740 P(2)=(P(8)*M5-M1*M2)/(P(8)*M3-M1^2)
1750 P(1)=(M2-P(2)*M1)/P(8)
1760 P(4)=P(1)
1770 P(5)=P(2)
1780 D=0
1790 FOR I=1 TO P(8)
1800  D=D+(Y1(I)-P(1)-P(2)*X1(I))^2
1810 NEXT I
1820 P(23)=1-D/(M4-M2^2/P(8))
1830 P(3)=2
1840 P(6)=D/(P(8)-2)
1850 P(9)=1
1860 P(29)=1
1870 P(27)=P(6)
1880 L$="CALIBRATION OF INSTRUMENT RESPONSE "&V$
1882 L$=L$&" - "
1884 L$=L$&N$
1886 DIM Y$(30)
1890 X$="CONCENTRATION"
1900 Y$="INSTRUMENT RESPONSE"
1910 D$=SEG(B$,14,2)
1920 D$=D$&"/"
1930 W$=SEG(B$,12,2)
1940 D$=D$&W$
1950 D$=D$&"/"
1960 W$=SEG(B$,16,2)
1970 D$=D$&W$
1980 GOSUB 61000
1983 P(1)=-0.34622
1986 P(2)=46.48715
1990 P0=P
1992 F$="HRU "
1994 GOSUB 20000
1996 INPUT @U21:B$,P

2000 REM$ PROCESS QL&QP DATA

2005 Q$="QL"
2010 C=0.216
2015 GOSUB 7000
2030 GOSUB 3500
2035 GOSUB 3625

2200 REM$ PROCESS ACTUAL DATA

2215 N=0

2240 REM INPUT ACTUAL DATA

2250 FIND @U1:1
2260 INPUT @U1:B$
```

```
+++3+++  2270 A=TYP(0)
         2280 IF A<>2 THEN 2900
         2290 INPUT @U1:D$
         2300 GOSUB 5000
         2310 IF A<>1 THEN 2270
         2315 Y$=SEG(D$,118,2)
         2316 IF Y$<>"PL" THEN 2270

         2320 REM PROCESS ACTUAL DATA

         2330 N=N+1
         2340 GOSUB 10000
         2350 GO TO 2270
+++1+++  2900 PRINT "CKJ"
         2905 PRINT "GIGNGSGEGRGTG GPGRGOGGGRGAGNG GTGAGPGEG GIGNG G4G0G5G1G"
         2910 PRINT "PRESS 'HOME PAGE' TO CONTINUE"
         2920 PRINT "CKJ"
         2930 FIND 3
         2940 OLD
```

```
---1---   3000 REM$  DETERMINE GROUPS

         3005 K=0
         3010 N2=0
+++2+++  3020 FOR J1=1 TO N
         3030  IF N2(J1)=0 THEN 3045
         3040 NEXT J1
+++1+++  3045 IF J1=N THEN 3275
         3046 IF J1>N THEN 3280
         3050 K=K+1
         3060 N2(J1)=K
         3065 IF J1=N THEN 3280
         3070 J2=1
         3080 J3=Y1(J1)
         3090 J4=Y1(J1)^2
         3100 FOR J=J1+1 TO N
         3110  IF N2(J)<>0 THEN 3180
         3120  IF X1(J1)=X1(J) THEN 3140
         3130  GO TO 3180
+++1+++  3140  N2(J)=K
         3150  J2=J2+1
         3160  J3=J3+Y1(J)
         3170  J4=J4+Y1(J)*Y1(J)
+++2+++  3180 NEXT J
         3190 J5=J4-J3*J3/J2
         3200 IF J2=1 OR J5=0 THEN 3220
         3210 GO TO 3020
+++1+++  3220 FOR J=1 TO N
         3230  IF N2(J)<>K THEN 3250
         3240  N2(J)=-1
+++1+++  3250 NEXT J
         3260 K=K-1
         3270 GO TO 3020
+++1+++  3275 N2(N)=-1
+++2+++  3280 N7=0
         3290 FOR J=1 TO N
         3300  IF N2(J)=-1 THEN 3320
         3310  N7=N7+1
```

```
++++1+++  3320 NEXT J

          3330 REM* DETERMINE NUMBER IN EACH GROUP & SAVE X&Y

          3350 NO=0
          3355 DIM G6(N),G7(N)
          3360 FOR T3=1 TO N
          3370  G6(T3)=Y1(T3)
          3380  G7(T3)=X1(T3)
          3385  IF N2(T3)=-1 THEN 3400
          3390  NO(N2(T3))=NO(N2(T3))+1
++++1+++. 3400 NEXT T3
          3410 RETURN

-------------------------------------------------------------------------------

---1---   3500 REM$ QC

          3501 ON SIZE THEN 3503
          3502 GO TO 3510

-------------------------------------------------------------------------------

---1---   3503 FUZZ 15,1.0E-24
          3504 OFF SIZE
          3505 RETURN

++++1+++  3510 REM*(X1(N2(I)),P(25),P(26))

          3530 S1=0
          3540 S2=0
          3541 J=0
          3542 IF N>0 THEN 3550
          3544 P(25)=0
          3546 P(26)=0
          3548 P(28)=0
          3549 GO TO 3620
++++1+++  3550 FOR I=1 TO N
          3565  J=J+1
          3570  S1=S1+X1(I)
          3580  S2=S2+X1(I)^2
          3590 NEXT I
          3600 P(25)=S1/J
          3605 P(28)=J
          3610 P(26)=SQR(S2/J-P(25)^2)
++++1+++  3620 RETURN

-------------------------------------------------------------------------------

---1---   3625 REM* UPDATE PLOTSQC

          3630 F$="PLOTSQC"
          3640 GOSUB 60000
++++1+++  3650 INPUT @U2,6:A
          3660 IF A<>2 THEN 3690
          3670 INPUT @U2:B$
          3680 GO TO 3650
++++1+++  3690 B$=M$&"RL.216"
          3698 PRINT @U2:B$
          3700 PRINT @U2:B$
          3710 PRINT @U2:0$
```

```
          3720 PRINT @021C,P(25),P(26),P(28) ;
          3730 RETURN

          4000 REM$ DETERMINE SCALE SHIFTS FOR X AND Y

          4010 P(31)=1
          4020 P(32)=0.1
          4030 FOR T3=1 TO N
          4040  P(31)=P(31) MIN Y1(T3)
          4050  P(32)=P(32) MIN X1(T3)
          4060 NEXT T3
          4062 P(31)=1-P(31)
          4064 P(32)=0.1-P(32)
          4070 IF Z1<4 THEN 4110
          4080 P(31)=P(32)

          4100 REM* INITLIZE P

+++1+++   4110 P(8)=N
          4120 P(7)=0.
          4130 P(9)=K
          4140 P(19)=0
          4150 P(20)=0
          4160 P(21)=0
          4170 P(22)=0
          4180 P(23)=0
          4190 P(24)=0

          4200 REM* INITIAL TRANSFORMATION

          4210 FOR T3=1 TO N
          4220  Y1(T3)=(G6(T3)+P(31))^P(29)
          4230  X1(T3)=G7(T3)+P(32)
          4240 NEXT T3
          4250 RETURN
```

```
---3---   5000 REM$ CHECK FOR ACCEPTABLE RECORD

          5010 A=1
          5020 X$=SEG(B$,6,1)
          5030 IF NOT(X$="1" OR X$="3") THEN 5110
          5040 X$=SEG(B$,18,2)
          5050 IF X$<>"N " THEN 5110

          5060 REM X$=SEG(B$,20,1)
          5070 REM IF X$<>N$ THEN 5110
          5080 REM X$=SEG(B$,87,3)
          5090 REM IF X$<>V$ THEN 5110

          5100 RETURN
+++2+++   5110 A=0
          5120 RETURN
```

```
---1---   6000 REM$ GROUP MOMENTS

          6005 N7=0
```

```
          6010 M6=0
          6020 M7=0
          6030 M8=0
          6040 M9=0
          6050 FOR I=1 TO N
          6055  IF N2(I)<1 THEN 6100
          6057  N7=N7+1
          6060  M6(N2(I))=M6(N2(I))+X1(I)
          6070  M7(N2(I))=M7(N2(I))+Y1(I)
          6080  M8(N2(I))=M8(N2(I))+X1(I)*X1(I)
          6090  M9(N2(I))=M9(N2(I))+Y1(I)*Y1(I)
++1+++    6100 NEXT I
          6110 RETURN

-------------------------------------------------------------------------------

---1---   7000 REM$ GET DATA FOR QL & QP

          7010 N=0
          7020 FIND @U1:1
          7030 INPUT @U1:B$
++1+++    7040 A=TYP(0)
          7050 IF A<>2 THEN 7230
          7060 INPUT @U1:B$
          7070 GOSUB 5000
          7080 IF A<>1 THEN 7220
          7090 W$=SEG(B$,118,2)
          7100 IF W$<>Q$ THEN 7220

          7102 REM CHECK FOR CONTROL CONCENTRATION

          7104 Y$=SEG(B$,97,7)
          7106 IF VAL(Y$)<>C THEN  220
          7110 Y$=SEG(B$,48,7)
          7120 Y=VAL(Y$)
          7130 X=(Y-P0(1))/P0(2)
          7140 W$=SEG(B$,62,7)
          7150 X=X*VAL(W$)
          7160 Y$=SEG(B$,97,7)
          7170 Y=VAL(Y$)
          7180 N=N+1
          7190 X1(N)=X
          7200 Y1(N)=Y
+++3+++   7220 GO TO 7040
+++1+++   7230 RETURN

-------------------------------------------------------------------------------

---1---   10000 REM$ GET ACTUAL DATA FROM B$
          10010 REM* PEAK HIEGHT

          10020 Y$=SEG(B$,40,7)
          10030 Y0=VAL(Y$)
          10040 Y0=(Y0-P0(1))/P0(2)
          10045 X0=(Y0-P(1))/P(2)
          10050 GOSUB 15000
          10060 X$=SEG(B$,62,7)
          10070 Q0=VAL(X$)
          10080 X$=SEG(B$,69,7)
          10090 Q0=Q0*VAL(X$)
```

```
10140 REM* GET TIME

10150 X$=SEG(B$,126,2)
10160 Y$=SEG(B$,122,2)
10170 X=VAL(X$)
10180 Y=VAL(Y$)
10190 Z=X-Y
10200 X$=SEG(B$,124,2)
10210 Y$=SEG(B$,120,2)
10220 X=VAL(X$)
10230 Y=VAL(Y$)
10240 Z=(X-Y)*60+Z

10250 REM* GET AIRFLOW

10260 Y$=SEG(B$,90,7)
10270 Y=VAL(Y$)
10280 X0=X0*Q0/(Y*Z)+4.0E-4
10290 L0=L0*Q0/(Y*Z)+4.0E-4
10300 U0=U0*Q0/(Y*Z)+4.0E-4

10400 REM* PRINT OUT ACTUAL DATA

10405 T$=B$
10410 IF INT((N-1)/20)*20<>N-1 THEN 11000
10420 B$=E$
10430 B$=REP("ACTUAL DATA FOR H",24,17)
10440 B$=REP("DATE:",52,5)
10450 B$=REP(D$,58,8)
10455 PRINT "[illegible]"
10470 PRINT "J";B$
10480 B$=E$
10490 B$=REP("AGENT CONCENTRATION",29,19)
10500 PRINT "JJ";B$
10510 B$=E$
10520 B$=REP("-----------------------------",24,29)
10530 PRINT B$
10540 B$=E$
10550 B$=REP("SAMPLE LOCATION      TRUE   LOWER 95%",5,36)
10560 B$=REP("UPPER 95%            ",44,20)
10565 B$=REP("TIME",59,4)
10570 PRINT B$

+++1+++ 11000 REM PRINT DATA

11010 B$=E$
11020 X$=SEG(T$,21,6)
11030 B$=REP(X$,5,6)
11040 X$=SEG(T$,116,2)
11050 E$=REP(X$,15,2)
11060 L$=STR(X0)

11070 REM  GOSUB 12000

11072 GOSUB 41600
11074 IF X0=-1.0E-3 THEN 11082
11076 L$=L$$"*"
11078 GO GO+1
+++1+++ 11082 X=G0
```

```
          11080 X$=SEG(L$,1,X)
          11090 B$=REP(X$,34,X)
          11095 IF X0 0.00115 THEN 11172
          11100 X$=STR(U0)

          11110 REM  GOSUB 12000

          11120 L$=X$
          11121 GOSUB 61600
          11122 X=U0
          11123 X$=SEG(L$,1,X)
          11124 GOSUB 14000
          11130 B$=REP(X$,34,X)
          11140 X$=STR(LO)

          11150 REM  GOSUB 12000

          11160 L$=X$
          11161 GOSUB 61600
          11162 X=U0
          11163 X$=SEG(L$,1,X)
          11164 GOSUB 14000
          11170 B$=REP(X$,46,X)

+++1+++   11172 REM

          11177 Z$=SEG(T$,120,4)
          11178 B$=REP(Z$,58,4)
          11179 Z$=SEG(T$,124,4)
          11180 B$=REP(Z$,62,.)
          11185 PRINT B$
          11189 RETURN
          11200 X=POS(X$,"E",1)
          11210 X=POS(X$,"-",1)
          11220 IF X=0 THEN 12200
          11230 Y=LEN(X$)
          11240 I$=SEG(X$,X+1,Y-X)
          11250 I=VAL(I$)
          11260 IF I 0 THEN 12300
          12080 FOR J=1 TO -I
          12090   I$=SEG(X$,2,1)
          12100   I$="0."&J$
          12110   J$=SEG(X$,4,Y-4)
          12120   X$=I$&J$
          12130 NEXT J
+++1+++   12200 X=POS(X$,".",1)
          12210 Y=LEN(X$)
          12220 IF Y-X<3 THEN 12300
          12230 X$=SEG(X$,1,X+3)
+++2+++   12300 RETURN

---2---   14000 REM$ CHECK IF DATA IF FROM LOCATION "DR"

          14010 Y$=SEG(T$,116,2)
          14020 IF Y$="DR" OR Y$="CR" OR Y$="RA" THEN 14050
          14030 X=LEN(Y$)
          14040 X$=SEG(E$,1,X)
+++1+++   14050 RETURN
```

```
---1---  15000 REM$
         15010 REM$      SOLVE LINEAR REGRESSION IN REVERSE FOR
         15020 REM$          UPPER AND LOWER CONFIDENCE LIMITS
         15030 REM$          (Y0,X0;L0,U0)
         15040 REM$     T-VALUES   L=.025    U=.975

         15050 X7=X0
         15060 U0=0

         15070 REM$ TRANSFORM Y0

         15071 IF P(8)>40 THEN 15075
         15072 T9=T7(P(8)-2)
         15073 GO TO 15080
***1***  15075 T9=1.96
***1***  15080 Y0=((Y0)^P(31))^P(29)
         15090 Y7=Y0
         15100 T3=T9^2*P(6)
         15110 A1=F(2)^2-P(10)*T3
         15120 B1=F(2)*(Y7-P(1))-P(11)*T3
         15130 A9=(0.4342+1.1734*X7)^2^P(7)
         15140 S3=0
         15150 A2=A9*F(12)
         15160 B2=Y7-P(1)
         15170 A3=T3*P(11)^2-T3*P(10)*A2+P(2)^2*A2+P(10)*B2^2-2*P(2)*P(11)*B2
         15180 B3=T9*SQR(A3*P(6))
         15190 X7=(B1+B3)/A1
         15210 L0=X7-F(32)
         15220 X7=(B1-B3)/A1
         15240 U0=X7-F(32)
         15250 RETURN
```

```
---1---  20000 REM$
         20010 REM$Perform Bartlett's test for homogeneity
         20020 REM$ (P(6),P(7),Y2(J),X2(N0(J)),K;C8,M1)
         20030 REM$ find variance for each level
         20040 REM$

         20042 ON SIZE THEN 21000
         20045 C8=-1
         20046 IF K=0 THEN 21000
         20048 S4=1
         20050 S=0
         20060 GOSUB 6000
         20070 S=0
         20080 FOR J=1 TO N
         20085   IF N2(J)=-1 THEN 20100
         20090   S=N2(J))-S(N2(J))+(Y1(J)-M7(N2(J))/N0(N2(J)))^2
***1***  20095 NEXT J
         20110 FOR J=1 TO K
         20120   S(J)=S(J)/(N0(J)-1)
         20130   IF S(J)=0 THEN 21000
         20140 NEXT J

         20140 REM$
```

```
        20150 REM*find pooled variance
        20160 REM*
        20170 A=0
        20180 FOR J=1 TO K
        20190  S3=1
        20200  A=(NO(J)-1)*S(J)/S3+A
        20210 NEXT J
        20220 S4=A/(NZ-K)
        20230 REM*
        20240 REM*find correction factor
        20250 REM*
        20260 A=0
        20270 FOR J=1 TO K
        20280  A=1/(NO(J)-1)+A
        20290 NEXT J
        20300 C=1+A/(3*(K-1))
        20310 REM*
        20320 REM*find chi-square
        20330 REM*
        20340 A=0
        20350 FOR J=1 TO K
        20360  S3=1
        20370  A=(NO(J)-1)*LOG(S(J)/S3)+A
        20380 NEXT J
        20390 C8=((NZ-K)*LOG(S4)-A)/C
        20395 IF C8=0 THEN 21000
        20400 M1=K-1
        20405 OFF SIZE
        20410 RETURN
---------------------------------------------------------------------------
---4---  21000 PRINT "BARTLETT'S TEST NOT DEFINED FOR DATA SET ";M$
        21010 C8=-1
        21011 M1=K-1
        21015 OFF SIZE
        21020 RETURN
---------------------------------------------------------------------------
---1---  25000 REM$
        25001 IF C8<0 THEN 25003
        25002 GO TO 25030
+++1+++  25003 A1=-1
        25004 RETURN
        25010 REM*CHI-SQUARE DISTRIBUTION
        25020 REM* (C8,M1,A1,C8)
+++1+++  25030 A1=0
        25040 IF C8 100 THEN 25110
        25050 A=M1/2
        25060 U=C8/2
        25070 GOSUB 25120
        25080 IF A1=0 THEN 25110
```

```
          25090 A2=10^(5+INT(-LGT(A1)))
          25100 A1=INT(A2*A1+0.5)/A2
+++2+++   25110 RETURN
-------------------------------------------------------------------------------
---1---   25120 IF A>100 THEN 25630
          25130 A1=1
          25140 A2=1
          25150 B2=1
          25160 I=1
          25170 IF U<A THEN 25320
          25180 B1=U
          25190 B2=U+1-A
+++1+++   25200 A1=U*A2+I*A1
          25210 B1=U*B2+I*B1
          25220 I=I+1
          25230 A2=A1+(I-A)*A2
          25240 B2=B1+(I-A)*B2
          25250 IF ABS(A1/B1-A2/B2)>1.0E-7 THEN 25200
          25260 C9=A2/B2
          25270 F2=A*LOG(U)-U
          25280 X=A
          25290 GOSUB 25470
          25300 A1=C9*EXP(F2-A1)
          25310 RETURN
+++1+++   25320 A1=1/A-U
          25330 B1=1+A
+++1+++   25340 C9=2*I+A
          25350 A2=C9*A1+I*U*A2
          25360 B2=C9*B1+I*U*B2
          25370 A1=C9*A2+A2-(A+I)*U*A1
          25380 B1=C9*B2+B2-(A+I)*U*B1
          25390 I=I+1
          25400 IF ABS(A2/B2-A1/B1)>1.0E-8 THEN 25340
          25410 C9=B1/A1
          25420 X=A+1
          25430 GOSUB 25470
          25440 A1=A*LOG(U)-U-A1
          25450 A1=1-C9*EXP(A1)
          25460 RETURN
-------------------------------------------------------------------------------
---2---   25470 IF X<10 THEN 25500
          25480 GOSUB 25600
          25490 RETURN
+++1+++   25500 A2=10-INT(X)
          25510 B1=1
          25520 FOR I=0 TO A2-1
          25530   B1=B1*(X+I)
          25540 NEXT I
          25550 X=X+A2
          25560 GOSUB 25600
          25570 X=X-A2
          25580 A1=A1-LOG(B1)
          25590 RETURN
-------------------------------------------------------------------------------
---2---   25600 A1=(X-0.5)*LOG(X)-X+0.5*LOG(2*PI)
          25610 A1=A1+1/(12*X)-1/(360*X^3)+1/(1260*X^5)
          25620 RETURN
```

```
+++1+++  25630 A1=A-0.5
         25640 U1=U*(1/3-A-0.02/A
         25650 X=A1/U
         25660 C9=0
         25670 IF X=1 OR X=0 THEN 25690
         25680 C9=(1-X*X+2*X*LOG(X))/((1-X)*(1-X))
+++1+++  25690 C9=U1*SQR((1+C9)/U)
         25700 IF ABS(C9)>20 THEN 25780
         25710 T=1/(1+0.2316419*ABS(C9))
         25720 A1=T*(0.31938153+T*(-0.3565637B2+1.781477937*T))
         25730 A1=A1+T^4*(-1.821255978+1.330274429*T)
         25740 A1=SQR(1/(2*PI))*EXP(-C9*C9/2)*A1
+++1+++  25750 IF C9>0 THEN 25770
         25760 A1=1-A1
+++1+++  25770 RETURN
+++1+++  25780 A1=0
         25790 GO TO 25750

         59000 REM$
         59010 REM*  GET HISTORY NAME
         59020 REM*

         59030 GOSUB 60000
         59050 ON SRQ THEN 59120
+++1+++  59060 INPUT @U2,6:A -
         59070 IF A=1 THEN 59120
         59080 INPUT @U21B$,P
         59090 IF A=1 THEN 59140
         59100 GO TO 59060

         59110 REM*ON SRQ

---2---  59120 INPUT @U2,30:A
         59130 A=1
+++1+++  59140 RETURN

         59500 REM$
         59510 REM*        UPDATE HISTORY FILE
         59520 REM*        (N,X2,P(7),P(10,P(11),P(12))

         59530 W1=0
         59540 W2=0
         59550 W3=0
         59560 C=0
         59570 FOR J=1 TO N
         59580  W=1/(P(6)*X2(J)+P(30))^P(7)
         59590  W1=W1+W
         59600  W2=W2+W*X2(J)
         59610  W3=W3+W*X2(J)^2
         59620 NEXT J
         59630 C=W1*W2-W3^2
         59640 P(10)=W1/C
         59650 P(11)=W2/C
         59660 P(12)=W3/C
         59670 F$="NC"%M$
         59672 IF R$="  " THEN 59680
         59673 F$=REP("R",5,1)
         59674 F$=F$%R$
```

```
+++1+++  59680 GOSUB 60000
         59690 PRINT @U2:D$,P
         59695 PRINT @U2,2;
         59700 RETURN
-------------------------------------------------------------------------------

---7---  60000 REM$    FIND/OPEN
         60010 REM$ (F$,N9)

         60015 FIND @U2:0
         60020 FIND @U2:1
         60030 INPUT @U2:B$
         60040 J$=SEG(B$,1,3)
         60050 IF J$<>"IDS" THEN 60330
+++1+++  60060 INPUT @U2,6;A
         60070 IF A=1 THEN 60160
         60080 INPUT @U2:B$
         60090 DIM J$(10)
         60100 J$=SEG(B$,4,10)
         60110 F=LEN(F$)
         60120 DIM J$(F)
         60130 IF J$=F$ THEN 60190
         60140 GO TO 60060

         60150 REM$

+++1+++  60160 PRINT "ERROR **** FILE "F$" NOT FOUND"
         60170 PRINT @U2,2;
         60180 END
+++1+++  60190 J$=SEG(B$,1,3)
         60200 N9=VAL(J$)
         60205 FIND @U2:0
         60210 FIND @U2:N9
         60220 INPUT @U2:B$
         60230 DIM J$(10)
         60240 J$=SEG(B$,1,10)
         60250 F=LEN(F$)
         60260 DIM J$(F)
         60270 IF J$<>F$ THEN 60290
         60280 RETURN
+++1+++  60290 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
         60300 PRINT "INDEX NAME = "F$" INTERNAL NAME = "J$
         60310 PRINT @U2,2;
         60320 END
+++1+++  60330 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
         60340 PRINT @U2,2;
         60350 END
-------------------------------------------------------------------------------

---1---  61000 REM$
         61010 REM$       DEFINE AND WRITE PLOT FILE
         61020 REM$ (A$,L$,X$,Y$,D$,F$,F6)
         61030 REM$

         61040 DIM P$(3)
         61050 P$="000"
         61055 FIND @U2:0
         61060 FIND @U2:1
```

```
+++2+++  61070 INPUT @U2,6:A
         61080 IF A<>2 THEN 61150
         61090 INPUT @U2:B$
         61100 A$=SEG(B$,4,6)
         61110 Q$="P"&M$
         61120 IF A$<>Q$ THEN 61070
         61130 P$=SEG(B$,10,2)
         61140 GO TO 61070
+++1+++  61150 T3=VAL(P$)
         61160 T3=T3+1
         61170 P$=STR(T3)
         61180 F$="P"&M$
         61190 F$=F$&P$

         61200 REM*
         61210 REM*          UPDATE INDEX
         61220 REM*

         61230 A$=SEG(B$,1,3)
         61240 T3=VAL(A$)
         61250 T3=T3+1
         61260 I$=" "
         61270 PRINT @U2: USING 61280:T3,F$,"T",I$
         61280 IMAGE 3D,10A,1A,20A
         61282 PRINT @U2,2:
         61285 FIND @U2:0
         61290 FIND @U2:T3
         61300 MARK @U2:1,2500
         61305 FIND @U2:0
         61310 FIND @U2:T3
         61320 PRINT @U2: USING 61330:F$,D$,U$
         61330 IMAGE 10A,8A,8A
         61340 PRINT @U2:L$
         61350 PRINT @U2:X$
         61360 PRINT @U2:Y$
         61370 PRINT @U2:N$
         61380 PRINT @U2:D$
         61390 PRINT @U2:P
         61400 DIM G6(P(8)),G7(P(8))
         61410 PRINT @U2:G7,G6
         61420 PRINT @U2,2:

         61430 REM*
         61440 REM*          UPDATE PLOTFILES
         61450 REM*

         61460 F$="PLOTFILES"
         61470 GOSUB 60000
+++1+++  61480 INPUT @U2,6:A
         61490 IF A<>2 THEN 61520
         61500 INPUT @U2:T4
         61510 GO TO 61480
+++1+++  61520 PRINT @U2:T3
         61530 PRINT @U2,2:
         61540 RETURN

-------------------------------------------------------------------------------

---3---  61600 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
         61610 REMPL$(LPASSED IN CONTAINING NUMBER IN CHARACTER FORM THAT
```

```
          61620 REM      IS TO BE PRINTED OUT TO 3 DECIMAL PLACES
          61630 REM      RESULTANT STRING ISTPASSED BACK IN L$
          61640 REM      FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 6

          61641 K$=SEG(L$,2,1)
          61642 IF K$="-" THEN 61750
          61650 Q0=POS(L$,"E",1)
          61660 IF Q0<>0 THEN 61700
          61670 L$=SEG(L$,1,6)
          61680 Q0=6
          61690 RETURN

+++1+++   61700 REM NUMBER IS IN SCIENTIFIC NOTATION

          61710 K$=SEG(L$,Q0+1,4)
          61720 Q0=VAL(K$)
          61730 IF Q0>0 THEN 61880
          61740 IF Q0>-4 THEN 61780
++++1+++  61750 L$=" 0.000"
          61760 Q0=6
          61770 RETURN
++++1+++  61780 K$=SEG(L$,1,1)
          61785 K$=K$&"0."
          61790 GO TO -Q0 OF 61820,61810,61800
++++1+++  61800 K$=K$&"0"
++++1+++  61810 K$=K$&"0"
++++1+++  61820 Q0=6-LEN(K$)
          61830 L$=SEG(L$,2,Q0+1)
          61840 L$=REP("",2,1)
          61850 L$=K$&L$
          61860 Q0=6
          61870 RETURN

++++1+++  61880 REM SECTON TO PRINT OUT #>0

          61890 L$=SEG(L$,1,5)
          61900 L$=L$&"E"
          61910 L$=L$&K$
          61920 Q0=64LEN(K$)
          61930 RETURN
```

FILE # 3

```
100 INIT
104 DATA 33,11,32
105 READ U1,U2,U3
110 DIM D$(8),U$(8)
111 DIM T7(40)
112 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
113 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
114 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
115 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2,023,2.022
116 READ T7
119 FIND @U2:0
120 FIND @U2:2
140 INPUT @U2,6:A
150 IF A=1 THEN 3355
160 INPUT @U2:U$,D$
170 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
190 PRINT @U3,17:4

195 REM*
196 REM* GET LIST OF FILES TO BE PLOTTED
197 REM*

270 F$="PLOTFILES"
280 GOSUB 4045
290 I=0
300 I=I+1
304 INPUT @U2,6:A
305 IF I=1 AND A=1 THEN 3360
310 INPUT @U2:N1(I)
320 INPUT @U2,6:T1(2)
330 IF T1(2)=2 THEN 300
340 T1(1)=I

350 REM*
360 REM* START PLOT LOOP
370 REM*

380 FOR I9=1 TO T1(1)
385  FIND @U2:0
390  FIND @U2:N1(I9)
400  INPUT @U2:Z$
410  INPUT @U2:L$
420  INPUT @U2:X$
430  INPUT @U2:Y$
440  INPUT @U2:A$
450  INPUT @U2:D$
460  INPUT @U2:P
465  IF P(8)=0 THEN 3350
470  DIM X(P(8)),Y(P(8))
475  N=P(8)
480  INPUT @U2:X,Y

490  REM*
500  REM* SET DEFAULT PLOT PARAMETER
510  REM*
520  REM T(4)-MIN X VALUE OF GRAPH      T(5)-LENGTH OF X AXIS
530  REM T(14)-MIN Y VALUE              T(15)-LENGTH OF Y AXIS
```

```
++++++  540  VIEWPORT 0,130,0,100
        550  WINDOW 0,130,0,100
        560  T=0
        570  T(1)=P(8)
        580  T(2)=2
        590  T(3)=4
        600  T(4)=10
        610  T(5)=70
        620  T(8)=1
        630  T(9)=1
        640  T(14)=25
        650  T(15)=70
        660  T(18)=1
        670  T(19)=1

        680  REM LABEL PLOT
        690  REM TITLE GRAPH

        700  X0=T(5)/2+T(4)-LEN(L$)*7/8
        710  Y0=97
        720  PAGE
        730  MOVE @U3:X0,Y0
        740  PRINT @U3:L$

        750  REM DUMP X AXIS TITLE

        760  X0=T(5)/2+T(4)-LEN(X$)*7/8
        770  Y0=T(14)-10
        780  MOVE @U3:X0,Y0
        790  PRINT @U3:X$

        800  REM DUMP Y AXIS LABEL

        810  X0=3
        820  Y0=T(15)/2+T(14)+LEN(Y$)*10/7
        830  MOVE @U3:X0,Y0
        840  PRINT @U3:" "
        850  FOR Z=1 TO LEN(Y$)
        860   Z$=SEG(Y$,Z,1)
        870   PRINT @U3:Z$
        880  NEXT Z

        890  REM DISPLAY INFO ON RIGHT SIDE OF PLOT

        900  X0=T(4)+T(5)+5
        910  Y0=T(14)+T(15)-2
        920  MOVE @U3:X0,Y0
        930  PRINT @U3:"AGENT: ";A$
        940  Y0=Y0-3
        950  MOVE @U3:X0,Y0
        960  PRINT @U3:"DATE: ";D$
        970  Y0=Y0-6
        980  MOVE @U3:X0,Y0
        990  PRINT @U3:"STATISTICS"
       1000   MOVE @U3:X0,Y0-0.5
       1010   PRINT @U3:"----------"
       1020   Y0=Y0-4
       1025   I%=2
       1026   GO TO 1110
       1030   MOVE @U3:X0,Y0
```

```
          1040  IMAGE FA,2D.3D,FA,8
          1050  PRINT @U3;"LACK OF FIT:"
          1060  Y0=Y0-3
          1070  MOVE @U3:X0,Y0
          1080  PRINT @U3: USING 1040;"";P(16);""
          1090  IF P(22)=0 THEN 1110
          1100  PRINT @U3: USING 1040;"/";P(22);""
+++2+++   1110  Y0=Y0-3
          1120  MOVE @U3:X0,Y0
          1130  PRINT @U3;"BARTLETTS:"
          1140  Y0=Y0-3
          1150  MOVE @U3:X0+T9,Y0
          1160  PRINT @U3: USING 1040;"";P(14);""
          1170  IF P(20)=0 THEN 1190
          1180  PRINT @U3: USING 10401;"/";P(20);""
+++1+++   1190  Y0=Y0-3
          1220  IMAGE FA,2D.3D
          1225  MOVE @U3:X0,Y0
          1226  PRINT @U3;"R-SQUARED:"
          1227  Y0=Y0-3
          1228  MOVE @U3:X0+T9,Y0
          1229  PRINT @U3: USING 1220;"";P(23)
          1236  IMAGE FA,3E
          1237  Y0=Y0-3
          1238  MOVE @U3:X0,Y0
          1239  PRINT @U3;"MSE:"
          1240  Y0=Y0-3
          1241  MOVE @U3:X0+T9,Y0
          1242  PRINT @U3: USING 1236;"";P(27)
          1245  Y0=Y0-6
          1247  MOVE @U3:X0,Y0
          1250  PRINT @U3;"PARAMETERS"
          1260  MOVE @U3:X0,Y0-0.5
          1270  PRINT @U3;"----------"
          1280  Y0=Y0-4
          1330  IMAGE FA,3D.2D,FA,2D.3D,FA,8
          1340  MOVE @U3:X0,Y0
          1370  PRINT @U3;"Y'= ";
          1380  GO TO P(3) OF 1381,1385,1390,1410,1430,1450,1470,1490
+++1+++   1381  PRINT @U3;"bX'"
          1382  GO TO 1494
+++1+++   1385  PRINT @U3;"a + bX'"
          1386  GO TO 1491
+++1+++   1390  PRINT @U3;"aEXP(bX')"
          1400  GO TO 1491
+++1+++   1410  PRINT @U3;"1/(a + bX')"
          1420  GO TO 1491
+++1+++   1430  PRINT @U3;"a + b/X'"
          1440  GO TO 1491
+++1+++   1450  PRINT @U3;"a + bLOG(X')"
          1460  GO TO 1491
+++1+++   1470  PRINT @U3;"aX'^b"
          1480  GO TO 1491
+++1+++   1490  PRINT @U3;"X'/(a + bX')"
++16+++   1491  Y0=Y0-3
          1492  MOVE @U3:X0+T9,Y0
          1493  PRINT @U3: USING 1236;"a= ";P(4)
+++1+++   1494  Y0=Y0-3
          1495  MOVE @U3:X0+T9,Y0
          1496  PRINT @U3: USING 1236;"b= ";P(5)
```

```
          1497  IF P(7)=0 THEN 1540
          1500  Y0=Y0-3
          1501  MOVE @U3:X0+T9,Y0
          1510  MOVE @U3:X0,Y0
          1520  PRINT @U3:"S(X) = c(X + e)^d"
          1521  Y0=Y0-3
          1522  MOVE @U3:X0+T9,Y0
          1523  PRINT @U3: USING 1236:"c= ",P(6)
          1524  Y0=Y0-3
          1525  MOVE @U3:X0+T9,Y0
          1526  PRINT @U3: USING 1236:"d= ",P(7)
          1527  Y0=Y0-3
          1528  MOVE @U3:X0+T9,Y0
          1529  PRINT @U3: USING 1236:"e = ",P(30)
++++1+++  1540  Y0=Y0-3
          1541  MOVE @U3:X0,Y0
          1542  PRINT @U3:"Y' = (Y + f)^g"
          1543  Y0=Y0-3
          1544  MOVE @U3:X0,Y0
          1545  PRINT @U3:"X' = X + h"
          1550  Y0=Y0-3
          1551  MOVE @U3:X0+T9,Y0
          1552  PRINT @U3: USING 1236:"f = ",P(31)
          1553  Y0=Y0-3
          1554  MOVE @U3:X0+T9,Y0
          1555  PRINT @U3: USING 1236:"g = ",P(29)
          1556  Y0=Y0-3
          1557  MOVE @U3:X0+T9,Y0
          1558  PRINT @U3: USING 1236:"h = ",P(32)
          1585  MOVE @U3:T(4)+T(5),T(14)
          1590  DRAW @U3:T(4)+T(5),T(14)+T(15)
          1595  DRAW @U3:T(4),T(14)+T(15)
          1600  GOSUB 3205
          1700  IF U3=1 THEN 1770
          1710  PRINT "[K]"
          1720  PRINT "DO YOU WANT A PLOTTER PLOT OF THIS PLOT? (Y/N)"
          1730  INPUT B$
          1740  IF B$<>"Y" THEN 1770
          1750  U3=10
          1760  GO TO 540
++++2+++  1770  U3=32
          1771  GO TO 3255
++++1+++  3255 NEXT I9

          3265 REM

          3335 FIND 4
          3345 OLD
++++1+++  3350 PRINT "NO DATA SETS FOUND ON THIS TAPE "
++++1+++  3355 END
++++1+++  3360 PRINT "THERE ARE NO PLOT FILES CURRENTLY QUEUED TO BE PRINTED"
          3361 END

          3365 REM*
          3375 REM* PLOT SUBROUTINES
          3385 REM*

-------------------------------------------------------------------------------
---1---   3395 REM$
```

```
          3405 U9=4
          3425 GOSUB 4305
          3435 U9=14
          3445 GOSUB 4305
          3455 U8=4
          3465 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
          3475 WINDOW T(6),T(6)+T(7),T(16),T(16)+T(17)
          3485 AXIS @U3:T(8),T(18)
          3495 U1=1
          3505 R2=T(18)/(T(17)/T(15))
          3515 R3=T(14)
+++1+++   3525 U$=STR(T(16)+(U1-1)*T(18))
          3535 PRINT @U3,21:0 MAX T(4)-(LEN(U$)+1)*1.78,R3-0.89
          3545 PRINT @U3:U$;
          3555 IF U1>T(19) THEN 3595
          3565 R3=R3+R2
          3575 U1=U1+1
          3585 GO TO 3525
!++1+++   3595 R2=T(8)/(T(7)/T(5))
          3605 R3=T(4)
          3615 U1=1
+++1+++   3625 U$=STR(T(6)+(U1-1)*T(8))
          3635 PRINT @U3,21:0 MAX R3-(LEN(U$)+1)*1.78*0.5,T(14)-4
          3645 PRINT @U3:U$;
          3655 IF U1>T(9) THEN 3695
          3665 R3=R3+R2
          3675 U1=U1+1
          3685 GO TO 3625
+++1+++   3695 FOR U1=1 TO T(1)
          3705  IF T(2)<>1 THEN 3725
          3715  IF U1>1 THEN 3745
+++1+++   3725  MOVE @U3:X(U1),Y(U1)
          3735  GO TO 3755
+++1+++   3745  DRAW @U3:X(U1),Y(U1)
+++1+++   3755  GOSUB 3705
          3765 NEXT U1
          3775 RETURN

-------------------------------------------------------------------------------
---1---   3785 S2=T(14+3)/T(14+1)*0.75
          3795 S1=T(4+3)/T(4+1)*0.75
          3805 GO TO T(3) OF 4095,3825,3885,3955,4025
          3815 GO TO 4095
+++1+++   3825 RMOVE @U3:0,S2
          3835 RDRAW @U3:S1,-2*S2
          3845 RDRAW @U3:-2*S1,0
          3855 RDRAW @U3:S1,2*S2
          3865 RMOVE @U3:0,-S2
          3875 RETURN
+++1+++   3885 RDRAW @U3:0,S2
          3895 RDRAW @U3:0,-2*S2
          3905 RDRAW @U3:0,S2
          3915 RDRAW @U3:-S1,0
          3925 RDRAW @U3:2*S1,0
          3935 RDRAW @U3:-S1,0
          3945 RETURN
!+1+++   3955 RMOVE @U3:S1,S2
          3965 RDRAW @U3:0,-2*S2
          3975 RDRAW @U3:-2*S1,0
          3985 RDRAW @U3:0,2*S2
```

```
         3995 RDRAW @U3:2*S1,0
         4005 RMOVE @U3:-S1,-S2
         4015 RETURN
+++1+++  4025 RMOVE @U3:0,S2
         4035 RDRAW @U3:S1,-S2
         4045 RDRAW @U3:-S1,-S2
         4055 RDRAW @U3:-S1,S2
         4065 RDRAW @U3:S1,S2
         4075 RMOVE @U3:0,-S2
         4085 RETURN
+++2+++  4095 IF T(2)=1 THEN 4115
         4105 RDRAW @U3:0,0
+++1+++  4115 RETURN
-----------------------------------------------------------------------------
---1---  4125 T(16)=10^39
         4135 T(17)=-T(22)
         4145 FOR U1=1 TO T(1)
         4155  T(16)=T(16) MIN Y(U1)
         4165  T(17)=T(17) MAX Y(U1)
         4175 NEXT U1
         4185 T9=T(17)-T(16)
         4195 T(17)=T9*(T9<>0)+(T9=0)
         4205 RETURN
-----------------------------------------------------------------------------
---1---  4215 T(6)=10^39
         4225 T(7)=-T(12)
         4235 FOR U1=1 TO T(1)
         4245  T(6)=T(6) MIN X(U1)
         4255  T(7)=T(7) MAX X(U1)
         4265 NEXT U1
         4275 T9=T(7)-T(6)
         4285 T(7)=T9*(T9<>0)+(T9=0)
         4295 RETURN
-----------------------------------------------------------------------------
---2---  4305 DIM SO(5)
         4315 SO(3)=INT(T(U9+1)/15)
         4325 SO(3)=T(U9+3)/SO(3)
         4335 SO(4)=INT(ABS(LGT(SO(3))))*SGN(LGT(SO(3)))
         4345 SO(4)=INT(10^SO(4)+1.0E-4)
         4355 IF SO(4)<0 THEN 4395
         4365 SO(3)=1
         4375 SO(4)=1
         4385 GO TO 4475
+++1+++  4395 SO(5)=SO(3)/SO(4)
         4405 SO(3)=SO(4)*10
         4415 IF SO(5)<=10 THEN 4435
         4425 SO(3)=SO(4)*5
+++1+++  4435 IF SO(5)<=5 THEN 4455
         4445 SO(3)=SO(4)*2
+++1+++  4455 IF SO(5)<=2 THEN 4475
         4465 SO(3)=SO(4)
+++2+++  4475 SO(5)=T(U9+2)/SO(3)
         4485 IF SO(5)<>0 THEN 4505
         4495 SO(5)=SO(5)*0.0E-99
+++1+++  4505 SO(1)=SO(3)*(INT(ABS(SO(5)))*SGN(SO(5)))
         4515 SO(5)=(T(U9+3)+T(U9+2))/SO(3)
         4525 IF SO(5)<0 THEN 4545
```

```
         4535 SO(5)=SO(5)+0.9999
+++1+++  4545 SO(2)=SO(3)*(INT(ABS(SO(5)))*SGN(SO(5)))
         4555 SO(5)=SO(2)-SO(1)
         4565 SO(4)=INT(INT(ABS(SO(5)))*SGN(SO(5))/SO(3))
         4575 IF SO(5)=>1 THEN 4605
         4585 SO(3)=SO(5)
         4595 SO(4)=1
+++1+++  4605 IF SO(3)=>1 THEN 4635
         4615 SO(3)=SO(5)
         4625 SO(4)=1
+++1+++  4635 T(U9+2)=SO(1)
         4645 T(U9+3)=SO(2)-SO(1)
         4655 T(U9+4)=SO(3)
         4665 T(U9+5)=SO(4)
         4675 T(U9+6)=1.75*T(U9+3)/T(U9+1)
         4685 RETURN

---------------------------------------------------------------------------------------
---2---  4695 X4=X0+P(32)
         4700 GO TO P(3) OF 4705,4705,4725,4745,4765,4785,4805,4825
+++2+++  4705 Y0=(P(1)+P(2)*X4)^(1/P(29))-P(31)
         4715 RETURN
+++1+++  4725 Y0=(P(4)*EXP(P(5)*X4))^(1/P(29))-P(31)
         4735 RETURN
+++1+++  4745 Y0=(1/(P(4)+P(5)*X4))^(1/P(29))-P(31)
         4755 RETURN
+++1+++  4765 Y0=(P(4)+P(5)/X4)^(1/P(29))-P(31)
         4775 RETURN
+++1+++  4785 Y0=(P(4)+P(5)*LOG(X4))^(1/P(29))-P(31)
         4795 RETURN
+++1+++  4805 Y0=(P(4)*X4^P(5))^(1/P(29))-P(31)
         4815 RETURN
+++1+++  4825 Y0=(X4/(P(4)+P(5)*X4))^(1/P(29))-P(31)
         4835 RETURN

---------------------------------------------------------------------------------------

---1---  4845 REM     FIND/OPEN
         4855 REM* (F$,N9)

         4860 FIND @U2:0
         4865 FIND @U2:1
         4875 INPUT @U2:B$
         4885 J$=SEG(B$,1,3)
         4895 IF J$<>"IDS" THEN 5175
+++1+++  4905 INPUT @U2,6:A
         4915 IF A=1 THEN 4995
         4925 INPUT @U2:B$
         4935 DIM J$(10)
         4945 J$=SEG(B$,4,10)
         4955 F=LEN(F$)
         4965 DIM J$(F)
         4975 IF J$=F$ THEN 5035
         4985 GO TO 4905

+++1+++  4995 REM*

         5005 PRINT "ERROR **** FILE";F$;"NOT FOUND"
         5015 CLOSE
         5025 END
```

```
+++1+++  5035 J$=SEG(B$,1,3)
         5045 N9=VAL(J$)
         5050 FIND @U2:0
         5055 FIND @U2:N9
         5065 INPUT @U2:B$
         5075 DIM J$(10)
         5085 J$=SEG(B$,1,10)
         5095 F=LEN(F$)
         5105 DIM J$(F)
         5115 IF J$ F$ THEN 5135
         5125 RETURN
+++1+++  5135 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
         5145 PRINT "INDEX NAME =";F$;"INTERNAL NAME =";J$
         5155 PRINT @U2,2;
         5165 END
+++1+++  5175 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
         5185 PRINT @U2,2;
         5195 END
```

```
---1---  5205 REM$  PLOT DATA,CURVE AND CONFIDENCE LIMITS

         5215 GOSUB 4125
         5225 GOSUB 4215
         5226 D7=X0
         5227 D8=X0
         5230 GO TO 5357

         5235 REM*  ADJUST RANGE OF FIT

         5245 X0=T(6)
         5255 GOSUB 4695

         5265 REM*  GET CONFIDENCE LIMITS

         5270 GOSUB 5715
         5275 GOSUB 6155
         5285 L0=L0 MAX 0
         5295 T(7)=T(7)+T(6)-L0
         5305 T(6)=L0
         5315 X0=T(6)+T(7)
         5325 GOSUB 4695

         5335 REM*  GET CONFIDENCE LIMITS

         5340 GOSUB 5715
         5345 GOSUB 6155
         5355 T(7)=T(7)+L0-X0

         5356 REM* ADJUST X RANGE

+++1+++  5357 T(6)=T(6)-0.1*T(7)
         5358 T(6)=T(6) MAX 0.01*T(7)
         5359 T(7)=T(7)*1.2

         5365 REM* ADJUST Y-RANGE

         5375 T(16)=T(16)-0.05*T(17)
         5385 T(16)=T(16) MAX 0.01*T(17)
```

```
5395 T(17)=T(17)*1.1
5405 REM*  PLOT OBSERVED DATA
5415 GOSUB 3395
5505 REM*
5515 REM*  DRAW @03:UPPER AND LOWER CONFIDENCE LIMITS
5525 REM*
5530 REM   T(16)=T(16)+0.01*T(17)  :
5545 Y0=T(16)
5548 GOSUB 5715
5550 Y0=T(16)
5556 MOVE @03:X0,Y0
5595 FOR Y0=T(16) TO T(16)+T(17) STEP T(17)/100
5600  Y5=Y0
5603  GOSUB 5715
5604  Y0=Y5
5605  DRAW @03:X0,Y0
5606 NEXT Y0
5607 REM DELETE NEXT LINE TO GET CONFIDENCE LIMITS AND DEF LIM BACK
5608 GO TO 5708
5607 Y0=T(16)
5610 GOSUB 5715
5612 Y0=T(16)
5614 D9=T(16)
5615 GOSUB 6155
5620 Y0=T(16)
5625 MOVE @03:L0,Y0
5630 FOR Y0=T(16) TO T(16)+T(17) STEP T(17)/100
5631  Y5=Y0
5632  GOSUB 5715
5633  Y0=Y5
5634  GOSUB 6155
5635  Y0=Y5
5636  DRAW @03:L0,Y0
5637  IF D0<0 THEN 5640
5638  D0=L0
5640 NEXT Y0
5641 GO TO 5078
5642 Y0=T(16)
5645 GOSUB 5715
5646 Y0=T(16)
5650 GOSUB 6155
5652 Y0=T(16)
5655 MOVE @03:U0,Y0
5660 FOR Y0=T(16) TO T(16)+T(17) STEP T(17)/100
5662  Y5=Y0
5665  GOSUB 5715
5666  Y0=Y5
5670  GOSUB 6155
5672  Y0=Y5
5675  DRAW @03:U0,Y0
5680 NEXT Y0
5685 T4=10000
5686 FOR T5=1 TO N
5687  T4=T4 MIN X(T5)
```

```
         5680 NEXT TS
         5689 IF DB>T4 THEN 5697
         5690 DB=T4
+++++++  5697 VIEWPORT 0,130,0,100
         5698 WINDOW 0,130,0,100
         5699 X$="DETECTION LIMIT IS "
         5700 Y$=STR(DB)
         5701 Y0=POS(Y$,".",1)
         5702 Y$=SEG(Y$,1,Y0+2)
         5703 X$=X$&Y$
         5704 X0=T(5)/2+T(4)-LEN(X$)*7/8
         5705 Y0=T(14)-14
         5706 MOVE @03:X0,Y0
         5707 PRINT @03:X$
+++++++  5708 RETURN

-------------------------------------------------------------------------------

---8---  5715 REM$
         5725 REM$  SOLVE LINEAR REGRESSION IN REVERSE FOR X0
         5735 REM$  (Y0;X0)
         5745 REM$ TRANSFORM Y0

         5750 Y0=(Y0+P(31))^P(29)
         5775 GOSUB P(3) OF 5825,5845,5865,5885,5905,5925,5945,5965
         5785 X7=(Y7-P(1))/P(2)

         5795 REM$  INVERSE TRANSFORM OF X7

         5805 GOSUB P(3) OF 5985,6005,6025,6045,6065,6085,6105,6125
         5810 Y0=X0-P(32)
         5815 RETURN

-------------------------------------------------------------------------------

---1---  5825 Y7=Y0
         5835 RETURN

-------------------------------------------------------------------------------

---1---  5845 Y7=Y0
         5855 RETURN

-------------------------------------------------------------------------------

---1---  5865 Y7=LOG(Y0)
         5875 RETURN

-------------------------------------------------------------------------------

---1---  5885 Y7=1/Y0
         5895 RETURN

-------------------------------------------------------------------------------

---1---  5905 Y7=Y0
         5915 RETURN

-------------------------------------------------------------------------------

---1---  5925 Y7=Y0
         5935 RETURN

-------------------------------------------------------------------------------

---1---  5945 Y7=LOG(Y0)
         5955 RETURN
```

```
---1---  5985 Y7=1/Y0
         5995 RETURN

---1---  5985 X0=X7
         5995 RETURN

---1---  6005 X0=X7
         6015 RETURN

---1---  6025 X0=X7
         6035 RETURN

---1---  6045 X0=X7
         6055 RETURN

---1---  6065 X0=1/X7
         6075 RETURN

---1---  6085 X0=EXP(X7)
         6095 RETURN

---1---  6105 X0=EXP(X7)
         6115 RETURN

---1---  6125 X0=1/X7
         6135 RETURN

         6145 REM#

---6---  6155 REM$
         6165 REM#      SOLVE LINEAR REGRESSION IN REVERSE FOR
         6175 REM#          UPPER AND LOWER CONFIDENCE LIMITS
         6185 REM#          (Y0,X0,L0,U0)
         6195 REM#     T-VALUES   L=.025    U=.975

         6205 T3=0
         6215 U0=0
         6216 IF P(8)>40 THEN 6220
         6217 T9=1/(N-2)
         6218 GO TO 6225
!!!!!!!  6220 T9=1.96

!!!!!!!  6225 REM# TRANSFORM Y0

         6230 Y0=(Y0+P(31))^P(29)
         6235 GOSUB P(3) OF 6395,6415,6435,6455,6475,6495,6515,6535
         6245 T3=T9^2*P(6)
         6250 A1=P(2)^2-P(10)*T3
         6255 B1=P(2)*(Y7-P(1))-P(11)*T3
```

```
6256 A9=(0.4342+1.1734*X7)^2^P(7)
6257 B3=0
6260 A2=A9+P(12)
6265 B2=Y7-P(1)
6275 A3=T3*P(11)^2-T3*P(10)*A2+P(2)^2*A2+P(10)*B2^2-2*P(2)*P(11)*B2
6285 B3=T9*SQR(A3*P(6))
6295 X7=(B1+B3)/A1

6305 REM*    INVERSE TRANSFORM OF X7

6315 GOSUB P(3) OF 6555,6575,6595,6615,6635,6655,6675,6695
6325 L0=X0-P(32)
6335 X8=(B1-B3)/A1

6345 REM*    INVERSE TRANSFORM OF X8

6355 X7=X8
6365 GOSUB P(3) OF 6555,6575,6595,6615,6635,6655,6675,6695
6375 U0=X0-P(32)
6385 RETURN

---1--- 6395 Y7=Y0
        6405 RETURN

---1--- 6415 Y7=Y0
        6425 RETURN

---1--- 6435 Y7=LOG(Y0)
        6445 RETURN

---1--- 6455 Y7=1/Y0
        6465 RETURN

---1--- 6475 Y7=Y0
        6485 RETURN

---1--- 6495 Y7=Y0
        6505 RETURN

---1--- 6515 Y7=LOG(Y0)
        6525 RETURN

---1--- 6535 Y7=1/Y0
        6545 RETURN

---2--- 6555 X0=X7
        6565 RETURN

---2--- 6575 X0=X7
        6585 RETURN
```

```
---2---  6595 X0=X7
         6605 RETURN

---2---  6615 X0=X7
         6625 RETURN

---2---  6635 X0=1/X7
         6645 RETURN

---2---  6655 X0=EXP(X7)
         6665 RETURN

---2---  6675 X0=EXP(X7)
         6685 RETURN

---2---  6695 X0=1/X7
         6705 RETURN

         6715 REM*DRAW MU

         6720 SET DEGREES
         6730 VIEWPORT 0,130,0,100
         6740 WINDOW 0,130,0,100

         6750 REM*H0 - PRINTED LINE HEIGHT
         6760 REM*H1 - PRINTED CHARACTER HEIGHT.
         6770 REM*H2 - WIDTH OF SPACE
         6780 REM*H3 - WIDTH OF A CHARACTER

         6790 S0=15
         6800 H0=2.82
         6810 H1=1.88
         6820 H2=1.79
         6830 H3=1.55
         6840 MOVE @U3:X0+H0/20,Y0+H2/20
         6850 RDRAW @U3:H3/S0,H1*5/S0
         6860 FOR I=1 TO S0/2
         6870  RDRAW @U3:0,H1/S0
         6880 NEXT I
         6890 FOR I=1 TO S0/2
         6900  RDRAW @U3:0,-H1/S0
         6910 NEXT I
         6920 FOR I=0 TO 180 STEP S0*3/2
         6930  ROTATE I+270
         6940  RDRAW @U3:H1/S0,0
         6950 NEXT I
         6960 FOR I=1 TO S0/2
         6970  RDRAW @U3:H1/S0,0
         6980 NEXT I
         6990 FOR I=1 TO S0/2
         7000  RDRAW @U3:-H1/S0,0
         7010 NEXT I
         7020 FOR I=270 TO 360 STEP S0/2*3
```

```
7030  ROTATE I
7040  RDRAW @U3:H1/S0,0
7050 NEXT I
7060 MOVE @U3:X0+H2*1.1,Y0+0.1*H0
7070 RETURN

7999 REM*DRAW RHO

8000 SET DEGREES
8010 VIEWPORT 0,130,0,100
8020 WINDOW 0,130,0,100

8030 REM*H0 - PRINTED LINE HEIGHT
8040 REM*H1 - PRINTED CHARACTER HEIGHT
8050 REM*H2 - WIDTH OF SPACE
8060 REM*H3 - WIDTH OF A CHARACTER

8070 MOVE @U3:X0-H1/2,Y0
8080 FOR I=-95 TO 265 STEP 15
8090  ROTATE I
8100  RDRAW @U3:H3/S0*1.3,0
8110 NEXT I
8120 ROTATE -5
8130 RDRAW @U3:0,-10*H3/S0
8140 RMOVE @U3:H3,0
8150 RETURN
```

THE FOLLOWING LINE NUMBERS ARE BRANCHED TO BUT DO NOT EXIST IN THIS TAPE FILE (# 3)
A "-" BEFORE THE LINE NUMBER INDICATES IT IS BRANCHED TO AS A SUBROUTINE (VIA A "GOSUB" OR "ON").

5078

FILE # 4

```
95 REM$ QC ANALYSIS

100 INIT
101 PRINT @32,26:0
102 SET DEGREES
104 DATA 33,11.32
105 READ U1,U2,U3
109 DIM Y1(31),Y2(31),Y3(31),X(31),Y(31),X9(31)
110 DIM U$(8),A1(31),B3(31),B4(31),D$(8),N$(2),M8(31),M9(31)
111 DIM L8(31),L9(31),U8(31),U9(31),S6(31),S7(31),Y8(31),Y9(31)
112 DATA 3.76,2.394,1.88,1.596,1.41,1.277,1.175,1.094,1.028,0.973,0.925
113 DATA 0.884,0.848,0.816,0.788,0.762,0.738,0.717,0.697,0.679,0.662
114 DATA 0.647,0.632,0.619,0.588,0.577,0.567,0.557,0.548,0.539,0.5303
115 READ A1
116 DATA 0,0.0,0,0,0.03,0.118,0.185,0.239,0.284,0.321,0.354,0.382,0.406
117 DATA 0.428,0.448,0.466,0.482,0.497,0.51,0.523,0.534,0.545,0.555
118 DATA 0.565,0.584,0.592,0.599,0.606,0.613,0.619
119 READ B3
120 DATA 0,3.267,2.568,2.266,2.089,1.97,1.882,1.815,1.761,1.716,1.679
121 DATA 1.646,1.618,1.594,1.572,1.552,1.534,1.518,1.503,1.49,1.477
122 DATA 1.466,1.455,1.445,1.435,1.416,1.408,1.401,1.394,1.387,1.381
123 READ B4
124 FIND @U2:0
130 FIND @U2:2
140 INPUT @U2,61A
150 IF A=1 THEN 10100
160 INPUT @U2:U$,D$
170 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
180 DIM W8(7),W9(7),C$(130)
190 PRINT @U3,17:4
191 C$="JANUARY   "
192 C$=C$&"FEBRUARY  "
193 C$=C$&"MARCH     "
194 C$=C$&"APRIL     "
195 C$=C$&"MAY       "
196 C$=C$&"JUNE      "
197 C$=C$&"JULY      "
198 C$=C$&"AUGUST    "
199 C$=C$&"SEPTEMBER "
200 C$=C$&"OCTOBER   "
201 C$=C$&"NOVEMBER  "
202 C$=C$&"DECEMBER  "

210 REM$
211 REM$ GET LIST OF FILES TO BE PLOTTED
212 REM$

220 K9=0
230 K9=K9+1
240 K2=0
250 F$="PLOTSQC"
260 GOSUB 4845
270 INPUT @U2,61A
280 IF A<>2 AND K2=0 THEN 10000
282 IF A<>2 THEN 10200
284 INPUT @U2:N$
286 INPUT @U2:D$
```

```
          288 INPUT @U2:Q$
          290 INPUT @U2:C,P(25),P(26),P(28)
          300 K2=K2+1
          310 IF K9=K2 THEN 321
          320 GO TO 270
+++1+++   321 FS=0
          322 IF P(28)=4 THEN 330
          323 PRINT "IS THIS THE FIRST STAT RUN FOR TODAY? (Y/N)"
          324 INPUT A$
          325 IF A$="Y" THEN 330
          326 FS=1

+++2+++   330 REM* SET X LABEL

          350 N$=SEG(D$,4,2)

          355 REM* SET X LABEL

          360 A$=SEG(D$,1,2)
          361 A=VAL(A$)
          362 A=(A-1)*9+1
          363 X$=SEG(C$,A,9)

          370 REM$ GET HISTORY Q

          372 RESTORE 381
          375 F$="HQ"&M$
          380 GOSUB 1845
          381 DATA 0,0,0,0
          382 READ F1,F2,F3,F4
          390 INPUT @U2:K1,D7,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
          395 INPUT @U2:W8,W9,F1,F2,F3,F4
          396 FOR I=1 TO 31
          397  X9(I)=I
          398 NEXT I
          400 D8=VAL(N$)
          415 K1=P(28)+FS*K1
          416 F1=0
          417 F3=0

          420 REM* M9(D8)=(M9(D7)*(K-1)+P(25))/K
          430 REM* M8(D8)=(M8(D7)*(K-1)+P(26))/K

          440 Y9(D8)=P(25)+FS*Y9(D8)
          450 Y8(D8)=P(26)+FS*Y8(D8)
          460 IF K1=4 THEN 551
          461 PRINT "NO QC PLOT WILL BE PRODUCED FOR ";M$;" AT LEVEL ";C;","
          462 PRINT "SINCE FOUR QC DATA POINTS ARE NOT YET AVAILABLE "
          463 GO TO 1080
          465 GO TO 551
          470 U9=M9(D8)+A1(K1)*M8(D8)
          480 L9=M9(D8)-A1(K1)*M8(D8)
          490 U8=FS(L1)*M8(D8)
          500 L8=A3(K1)*M8(D8)
          510 GO TO 551
          520 U9(D8)=M9(D8)+3/SQR(K1)*M8(D8)
          540 L9(D8)=M9(D8)-3/SQR(K1)*M8(D8)
          545 U8(D8)=(1+3/SQR(2*K1))*M8(D8)
          550 L8(D8)=(1-3/SQR(2*K1))*M8(D8)
```

```
+++3+++  551 REM* SET WARNING FLAGS

         552 IF NOT(Y2(D8)>U9(D8) OR Y9(D8)<L9(D8)) THEN 554
         553 F1=1
+++1+++  554 IF NOT(Y8(D8)>U8(D8) OR Y8(D8)<L8(D8)) THEN 556
         555 F3=1

+++1+++  556 REM* ZERO OUT DATA FROM D7 TO D8

         557 IF D7=D8 THEN 573
         558 I=D7
         560 IF D8>D7 THEN 562
         561 I=0
+++2+++  562 I=I+1
         563 IF I=D8 THEN 573
         564 Y9(I)=-1
         568 Y8(I)=-1
         572 GO TO 562

+++2+++  573 REM*
         620 REM* UPDATE WARNING

         621 F2=0
         622 F4=0
         625 FOR I=6 TO 1 STEP -1
         630  W8(I+1)=W8(I)
         640  W9(I+1)=W9(I)
         650 NEXT I
         660 IF Y9(D8)>M9(D8) THEN 690
         670 W9(1)=-1
         680 GO TO 700
+++1+++  690 W9(1)=1
+++1+++  700 IF Y8(D8)>M8(D8) THEN 730
         710 W8(1)=-1
         720 GO TO 740
+++1+++  730 W8(1)=1
+++1+++  740 FOR I=1 TO 7
         750  F2=F2+W9(I)
         760  F4=F4+W8(I)
         770 NEXT I
         771 F2=ABS(F2)
         772 F4=ABS(F4)

         780 REM* PLOT QC CHARTS

         790 L$="ACCURACY CONTROL CHART FOR "+M$
         810 Y$=" "
         820 W$=" "
         900 Y1=L9
         910 Y2=M9
         920 Y3=U9
         921 X=X9
         922 Y=Y9
         923 N=D6
         940 IF NOT(F1=1 OR F2=7) THEN 950
         945 W$="WARNING - PROCESS IS OUT OF CONTROL"

+++1+++  950 REM* GOSUB PLOT

         955 GOSUB 1775
```

```
          960 IF U3=10 THEN 967
          961 PRINT "DO YOU WANT A 4662 PLOT? (Y/N)"
          962 INPUT B$
          963 A$=SEG(B$,1,1)
          964 IF A$<>"Y" THEN 967
          965 U3=10
          966 GOSUB 1775
 +++2+++  967 U3=32
          970 L$="PRECISION CONTROL CHART FOR "&M$
          980 W$=" "
          990 Y=Y8
          1000 Y1=L8
          1010 Y2=M8
          1020 Y3=U8
          1025 D=M8
          1030 IF NOT(F3=1) THEN 1050
          1040 W$="WARNING - PROCESS IS OUT OF CONTROL"

 +++1+++  1050 REM$ GOSUB PLOT

          1055 GOSUB 1775
          1056 PRINT "2KJ"
          1060 IF U3=10 THEN 1067
          1061 PRINT "DO YOU WANT A 4662 PLOT? (Y/N)"
          1062 INPUT B$
          1063 A$=SEG(B$,1,1)
          1064 IF A$<>"Y" THEN 1067
          1065 U3=10
          1066 GOSUB 1775
 +++2+++  1067 U3=32

          1070 REM$ UPDATE HISTORY Q FILE

 +++1+++  1080 F$="HQ"&M$
          1090 GOSUB 4845
          1200 PRINT @02:K1,D0,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
          1210 PRINT @02:W8,W9,F1,F2,F3,F4
          1215 PRINT @02,21
          1220 GO TO 230

          1755 REM$
          1760 REM$ QC PLOT ROUTINES
          1765 REM$
```

```
 ---4---  1775 DIM W$(60),J$(60)
          1785 DIM X9(31),Y9(31),Y3(31),T(24)
          2090 PAGE

          2035 REM$ HEIGHT OF SPACE

          2040 H0=2.82

          2050 REM HEIGHT OF CHARACTER

          2055 H1 1.65

          2075 REM WIDTH OF SPACE
```

```
2085 H2=1.79

2095 REM WIDTH OF CHARACTER

2105 H3=1.55

2115 REM HEIGHT OF TIC MARK

2125 H4=1

2135 REM WIDTH OF TIC MARK

2145 H5=2
2155 VIEWPORT 0,130,0,100
2165 WINDOW 0,130,0,100

2175 REM X MIN

2185 T(4)=15

2195 REM X DOMAIN

2205 T(5)=105

2215 REM Y MIN

2225 T(14)=10

2235 REM Y RANGE

2245 T(15)=75

2255 REM BOX GRAPH

2265 MOVE @U3:T(4),T(14)
2275 DRAW @U3:T(4),T(14)+T(15)
2285 DRAW @U3:T(4)+T(5),T(14)+T(15)
2295 DRAW @U3:T(4)+T(5),T(14)
2305 DRAW @U3:T(4),T(14)

2315 REM MAKE TIC MARKS ON X AXIS

2325 FOR I=0 TO 34 STEP 2
2335  MOVE @U3:T(4)+I*3,T(14)+H4/2
2345  RDRAW @U3:0,-H4

2355  REM LABEL TIC MARK

2365  RMOVE @U3:-H2,-H0
2370  IF I=0 OR I=31 THEN 2405
2375  IF I<10 THEN 2395
2385  RMOVE @U3:-H2,0
2395  PRINT @U3:I
2405  NEXT I

2415 REM PRINT OUT WARNING

2420 A=LEN(W$)
2421 Y0=96
```

```
2423 IF A<2 THEN 2535
2425 X0=T(4)+(T(5)-LEN(W$)*H2)/2
2435 Y0=96
2445 MOVE @U3:X0,Y0
2455 PRINT @U3:W$;

2465 REM DRAW @U3:BOX AROUND WARNING

2475 MOVE @U3:X0-H2/2,Y0-H0/3
2485 RDRAW @U3:0,5*H0/3
2495 RDRAW @U3:(LEN(W$)+1)*H2,0
2505 RDRAW @U3:0,-5*H0/3
2515 RDRAW @U3:-(LEN(W$)+1)*H2,0

2525 REM WRITE TITLE

++++++ 2535 Y0=Y0-5
2545 X0=T(4)+(T(5)-LEN(L$)*H2)/2
2555 MOVE @U3:X0,Y0
2565 PRINT @U3:L$;
2575 Y0=Y0-3
2585 X0=T(4)+(T(5)-LEN(J$)*H2)/2
2595 MOVE @U3:X0,Y0
2605 PRINT @U3:J$;

2615 REM PRINT X AXIS LABEL

2625 Y0=T(14)-3*H0
2635 X0=T(4)+(T(5)-LEN(X$)*H2)/2
2645 MOVE @U3:X0,Y0
2655 PRINT @U3:X$;

2665 REM Y AXIS LABEL

2675 X0=3
2685 Y0=T(14)+(T(15)+LEN(Y$)*H0)/2
2695 MOVE @U3:X0,Y0
2705 FOR I=1 TO LEN(Y$) STEP 1
2715  Z$=SEG(Y$,I,1)
2725  PRINT @U3:Z$;"JH";
2735 NEXT I

2745 REM END OF PRELIMINARIES  NOW DO PLOTS

2746 Y4=Y1(1)
2747 Y5=Y3(1)
2748 I=(Y5-Y4)/2
2749 Q0=Y4-I
2750 Q1=Y5+I
2751 GO TO 2780

2755 REM SET UP STUFF

2756 Y4=[illegible]
     [illegible]
2758 [illegible] I=1 TO 31
2759  IF Y1(I)<0 THEN 2761
2760  Y4=Y4 MIN Y1(I)
++++++ 2761  IF Y1(I)>0 THEN 2763
2762  Y4=Y4 MIN Y1(I)
```

```
+++1+++  2763  Y5=Y5 MAX Y(I)
         2764  Y5=Y5 MAX Y3(I)
         2765 NEXT I

         2770 REM IN HERE GOES CODE TO PICK NEAT ENDPOINTS FOR Y-AXIS

+++1+++  2780 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
         2781 WINDOW 0,35,00,01
         2815 FOR I=1 TO D STEP 1
         2820  IF Y(I) 0 THEN 2845
         2821  IF Y(I) 01 THEN 9400
         2822  IF Y(I) 00 THEN 9500
         2825  MOVE @U3:X(I),Y(I)
         2845  GOSUB 3185
+++3+++  2845 NEXT I
         2855 GOSUB 9000
         2856 MOVE 0,Y1(1)
         2857 DRAW 35,Y1(1)
         2858 MOVE 35,Y3(1)
         2859 DRAW 0,Y3(1)
         2860 MOVE 0,Y2(1)
         2861 DRAW 35,Y2(1)
         2862 RETURN
         2865 MOVE @U3:0,Y1(1)
         2875 FOR I=1 TO D-1 STEP 1
         2880  IF Y1(I) 0 THEN 2900
         2885  DRAW @U3:X(I),Y1(I)
         2895  RDRAW @U3:0,Y1(I+1)-Y1(I)
         2898  GO TO 2905
+++1+++  2900  MOVE X(I+1),Y(I+1)
+++1+++  2905 NEXT I
         2915 DRAW @U3:X(D),Y1(D)
         2925 FOR I 1 TO 4
         2935  RMOVE @U3:0.5,0
         2945  RDRAW @U3:0.5,0
         2955 NEXT I

         2965 REM DO Y3

         2975 MOVE @U3:0,Y3(1)
         2985 FOR I=1 TO D-1 STEP 1
         2990  IF Y(I) 0 THEN 3015
         2995  DRAW @U3:X(I),Y3(I)
         3005  RDRAW @U3:0,Y3(I+1)-Y3(I)
         3010  GO TO 3020
+++1+++  3015  MOVE X(I+1),Y3(I+1)
+++1+++  3020 NEXT I
         3025 DRAW @U3:X(D),Y3(D)
         3035 FOR I=1 TO 4 STEP 1
         3045  RMOVE @U3:0.5,0
         3055  RDRAW @U3:0.5,0
         3065 NEXT I

         3075 REM Y2

         3085 MOVE @U3:0,Y2(1)
         3095 FOR I=1 TO D-1 STEP 1
         3100  IF Y2(I) 0 THEN 3125
         3105  RDRAW @U3:0.5,0
         3115  RMOVE @U3:0.5,Y2(I+1)-Y2(I)
```

```
          3120  GO TO 3130
++++++++  3125  MOVE X(I+1),Y2(I+1)
++++++++  3130 NEXT I
          3135 FOR I=1 TO S
          3145  DRAW @03:0.5,0
          3155  MOVE @03:0.5,0
          3165 NEXT I
          3175 RETURN

-------------------------------------------------------------------------------

 ---1---  3185 REM$ THIS CENTERS DIAMOND

          3200 MOVE @03:0,-0.01*(01-00)
          3205 DRAW @03:0.35,0.01*(01-00)
          3210 DRAW @03:-0.35,0.01*(01-00)
          3215 DRAW @03:-0.35,-0.01*(01-00)
          3220 DRAW @03:0.35,-0.01*(01-00)
          3225 RETURN
          3235 DRAW @03:X(D),Y(D)

-------------------------------------------------------------------------------

 ---3---  4845 REM$    FIND/OPEN
    .     4855 REM$ (F$ N9)

          4860 FIND @02:0
          4865 FIND @02:1
          4875 INPUT @02:B$
          4885 J$=SEG(B$,1,3)
          4895 IF J$= "IDS" THEN 5175
++++++++  4905 INPUT @02,#1A
          4915 IF A=1 THEN 4995
          4925 INPUT @02:B$
          4935 DIM J$(10)
          4945 J$=SEG(F$,4,10)
     *    4955 F=LEN(F$)
          4965 DIM J$(F)
          4975 IF J$=F$ THEN 5035
          4985 GO TO 4905

*+++++++  4995 REM$

          5005 PRINT "ERROR **** FILE";F$;"NOT FOUND"
          5015 CLOSE
          5025 FIND 1
          5035 OLD
++++++++  5045 J$=SEG(B$,1,3)
          5055 N9 VAL(J$)
          5065 FIND @02:0
          5075 FIND @02:N9
          5085 INPUT @02:B$
          5095 DIM J$(10)
          5105 J$=SEG(B$,1,10)
          5115 F=LEN(F$)
          5125 DIM J$(F)
          5135 IF J$=F$ THEN 5185
          5145 PRINT
++++++++  5155 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
          5165 PRINT "INDEX NAME =";F$;"INTERNAL NAME =";J$
```

```
        5155 PRINT @02,23;
        5165 FIND 1
        5166 OLD
!!!!!!! 5175 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
        5185 PRINT @02,23;
        5195 FIND 1
        5196 OLD

        5405 REM*  PLOT OBSERVED DATA

        5415 GOSUB 6715

        6715 REM*DRAW MU

        6720 SET DEGREES
        6730 VIEWPORT 0,130,0,100
        6740 WINDOW 0,130,0,100

        6750 REM*H0 - PRINTED LINE HEIGHT
        6760 REM*H1 - PRINTED CHARACTER HEIGHT
        6770 REM*H2 - WIDTH OF SPACE
        6780 REM*H3 - WIDTH OF A CHARACTER

        6790 S0=15
        6800 H0=2.82
        6810 H1=1.88
        6820 H2=1.79
        6830 H3=1.55
        6840 MOVE @03:X0+H0/20,Y0+H2/20
        6850 DRAW @03:H3/S0,H1*S/S0
        6860 FOR I=1 TO S0/2
        6870  DRAW @03:0,H1/S0
        6880 NEXT I
        6890 FOR I=1 TO S0/2
        6900  DRAW @03:0,-H1/S0
        6910 NEXT I
        6920 FOR I=0 TO 180 STEP S0*3/2
        6930  ROTATE I+270
        6940  DRAW @03:H1/S0,0
        6950 NEXT I
        6960 FOR I=1 TO S0/2
        6970  DRAW @03:H1/S0,0
        6980 NEXT I
        6990 FOR I=1 TO S0/2
        7000  DRAW @03:-H1/S0,0
        7010 NEXT I
        7020 FOR I=270 TO 350 STEP S0/2*3
        7030  ROTATE I
        7040  DRAW @03:H1/S0,0
        7050 NEXT I
        7060 MOVE @03:X0+H2*1.1,Y0+0.1*H0
        7070 RETURN

        7999 REM!DRAW END

        8000 SET DEGREES
        8010 VIEWPORT 0,130,0,100
        8020 WINDOW 0,130,0,100

        8030 REM*H0 - PRINTED LINE HEIGHT
```

```
          8040 REM#H1 = PRINTED CHARACTER HEIGHT
          8050 REM#H2 = WIDTH OF SPACE
          8060 REM#H3 = WIDTH OF A CHARACTER

          8070 MOVE @U3:X0-H1/2,Y0
          8080 FOR I =-95 TO 265 STEP 15
          8090  ROTATE I
          8100  KDRAW @U3:H3/50#1.3,0
          8110 NEXT I
          8120 ROTATE -5
          8130 KDRAW @U3:0,-10#H3/50
          8140 KMOVE @U3:H3,0
          8150 RETURN

          8999 REM ROUTINE TO LABEL Y AXIS

-----------------------------------------------------------------------------
---1---    9000 REM

          9070 L$=STR(Y1(1))
          9080 GOSUB &1500
          9090 MOVE @U3:0,Y1(1)
          9100 FOR I=1 TO 0011
          9110  PRINT @U3:"H";
          9120 NEXT I
          9130 PRINT @U3:L$;
          9140 L$=STR(Y2(1))
          9150 GOSUB &1600
          9160 MOVE @U3:0,Y2(1)
          9170 FOR I=1 TO 0011
          9180  PRINT @U3:"H";
          9190 NEXT I
          9200 PRINT @U3:L$;
          9210 L$=STR(Y3(1))
          9220 GOSUB &1600
          9230 MOVE @U3:0,Y3(1)
          9240 FOR I=1 TO 0011
          9250  PRINT @U3:"H";
          9260 NEXT I
          9270 PRINT @U3:L$;
          9360 RETURN

+++1+++   9400 REM ROUTINE TO DRAW ARROW POINTING UP

          9410 MOVE @U3:X(I),01
          9420 PRINT @U3:"J";
          9430 GO TO 2845

+++1+++   9500 REM ROUTINE TO DRAW UPSIDE DOWN ARROW

          9510 MOVE @U3:X(I),00
          9520 L$ CHR(122)
          9530 PRINT @U3:L$;
          9540 GO TO 2845
+++1+++   10000 PRINT "NO QC PLOTS ARE AVAILABLE FOR PLOTTING"
          10050 END 1
          10051 OLD
+++1+++   10100 PRINT "ERROR WITH HISTORY TAPE FILE NUMBER 2"
+++1+++   10200 END 1
          10201 OLD
```

```
---3---  61600 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
         61610 REMPL$(L PASSED IN CONTAINING NUMBER IN CHARACTER FORM THAT
         61620 REM      IS TO BE PRINTED OUT TO 3 DECIMAL PLACES
         61630 REM      RESULTANT STRING IS PASSED BACK IN L$
         61640 REM      FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 6

         61650 Q0=POS(L$,"E",1)
         61660 IF Q0>0 THEN 61700
         61670 L$=SEG(L$,1,6)
         61680 Q0=6
         61690 RETURN

+++1+++  61700 REM NUMBER IS IN SCIENTIFIC NOTATION

         61710 K$=SEG(L$,Q0+1,4)
         61720 Q0=VAL(K$)
         61730 IF Q0<0 THEN 61800
         61740 IF Q0>-4 THEN 61780
         61750 L$=" 0.000"
         61760 Q0=6
         61770 RETURN
+++1+++  61780 K$=SEG(L$,1,1)
         61785 K$=K$&"0."
         61790 GO TO -Q0 OF 61820,61810,61800
+++1+++  61800 K$=K$&"0"
+++1+++  61810 K$=K$&"0"
+++1+++  61820 Q0=6-LEN(K$)
         61830 L$=SEG(L$,2,Q0+1)
         61840 L$=REP("",2,1)
         61850 L$=K$&L$
         61860 Q0=6
         61870 RETURN

+++1+++  61880 REM SECTON TO PRINT OUT $>0

         61890 L$=SEG(L$,1,5)
         61900 L$=L$&"E"
         61910 L$=L$&K$
         61920 Q0=6-LEN(K$)
         61930 RETURN

 THE FOLLOWING LINE NUMBERS ARE BRANCHED TO BUT DO NOT EXIST IN THIS TAPE FILE ( # 4 )
 A "-" BEFORE THE LINE NUMBER INDICATES IT IS BRANCHED TO AS A SUBROUTINE (VIA A "GOSUB" OR "ON")

- 3395
```

FILE # 5

```
        10 DIM X$(4)
        110 PAGE
        120 PRINT
        130 PRINT *                          ID SETS MANAGEMENT*
        210 PRINT *JJJJJJJ*
        220 PRINT *                              Programmed by*
        230 PRINT *                        Computer Sciences Corporation*
        240 PRINT *                           Data Systems Laboratory*
        250 PRINT *                     NATIONAL SPACE TECHNOLOGY LABORATORY*
        260 PRINT *                        NSTL Station, Mississippi 39529*
        300 PRINT *JJJJ*
        305 X$="7.0"
        310 PRINT USING 315:X$
        315 IMAGE *                              Version*,2x,4a
        320 PRINT *                             FEBRUARY 18,1981*
        325 PRINT *JJJJ*
        340 PRINT *PRESS 'RETURN' TO CONTINUE *;
        355 INPUT Q$
        2000 U1=33
        2010 U2=11
        2020 GO TO 2180
        2030 PAGE
        2040 PRINT *EXTERNAL LABEL*;Y$;*IS NOT EQUAL TO TAPE LABEL*;A$
        2050 PRINT *WOULD YOU LIKE TO STOP? (Y/N)*
        2060 INPUT B$
        2070 IF B$<>*Y* THEN 2100
        2080 CLOSE
        2090 PRINT @U2,2;
+++1+++ 2100 END
+++1+++ 2120 PAGE
        2130 PRINT
        2140 PRINT *** error ** this is not the correct tape*
        2150 PRINT *PRESS 'RETURN' TO CONTINUE *;
        2155 INPUT Q$
        2160 GO TO 2230
+++1+++ 2180 PRINT *ENTER USER-ID*
        2190 INPUT U$
        2200 PRINT *ENTER DATE  MM/DD/YY *
        2210 INPUT D$
        2220 PAGE
+++1+++ 2230 PRINT *INSERT IDS HISTORY TAPE IN EXTERNAL TAPE UNIT # 4924*
        2240 PRINT
        2250 PRINT
        2260 PRINT *** ENTER EXTERNAL LABEL ON HISTORY TAPE*
        2270 INPUT Z$
        2275 FIND @U2:0
        2280 FIND @U2:1
        2285 A=LEN(Z$)
        2290 INPUT @U2:Y$
        2295 DIM Y$(A)
        2300 IF Z$<>Y$ THEN 2120
        2310 CLOSE
        2320 PAGE
        2325 FIND @U2:0
        2330 FIND @U2:2
        2340 PRINT @U2:U$
        2350 PRINT @U2:D$
        2360 FIND 2
```

2370 OLD

```
10 U2=11
100 PRINT "ENTER DATE (mm/dd/yy)"
110 INPUT D$
120 PRINT "ENTER HISTORY LABEL (IDSxx,,,x)"
130 INPUT C$
140 DIM P(34),X0(31),W(7),M9(31),M8(31),O0(31),O1(31),O2(31),O3(31)

141 REM PARMS FOR UNWEIGHTED LEAST SQUARES
142 REM VAR(Y)=K*(A+BX)^2
143 REM WHERE K=POOLED VARIANCE OF Y

150 P=0
160 P(6)=1
170 P(3)=1
180 P(29)=1
190 W=0
200 Z=0
210 D7=1
220 K=0
230 X4=0
240 PRINT "INSERT NEW HISTORY TAPE IN UNIT "U2
250 PRINT "PRESS 'RETURN' TO CONTINUE "
260 INPUT Z$
270 FIND @U2:0
280 MARK @U2:1,3000
290 FIND @U2:1
300 C$=C$&D$
310 PRINT @U2:C$
320 PRINT @U2:"002SYSTEM****P"
330 PRINT @U2:"003PLOTFILES*P"
340 PRINT @U2:"004PLOTSQC***P"
350 PRINT @U2:"005HIGH ******P"
360 PRINT @U2:"006HIGH QL.04*P"
370 PRINT @U2:"007HIGH QL..216P"
1000 PRINT @U2,2:
1010 FIND @U2:2
1020 MARK @U2:1,1000
1030 FIND @U2:2
1040 PRINT @U2:"SYSTEM****"
1050 FIND @U2:3
1060 MARK @U2:1,5000
1070 FIND @U2:3
1080 PRINT @U2:"PLOTFILES*"
1090 FIND @U2:4
1100 MARK @U2:1,5000
1110 FIND @U2:4
1120 PRINT @U2:"PLOTSQC***"
2000 FIND @U2:5
2010 MARK @U2:3,5000
2020 FIND @U2:5
2040 DIM X(400),Y(400)
2050 PRINT "ENTER TRUE VS FOUND DATA FOR H"
2055 PRINT "INSERT H DATA TAPE INTO 4052"
2056 INPUT A$
2060 P=0
2065 W1=0
2070 PRINT "INPUT N"
2072 P(7)=1
```

```
2074 P(6)=0.01085
2086 INPUT P(8)
2090 DIM X(P(8)),Y(P(8))
2095 FIND 2
2100 FOR I=1 TO P(8)
2130  INPUT @33:X(I),Y(I)
2139 NEXT I
2140 M1=0
2150 M2=0
2160 M3=0
2170 M4=0
2180 M5=0
2185 W=0
2190 FOR I=1 TO P(8)
2195  W0=(0.4342+1.1734*X(I))^-2
2200  M1=M1+X(I)*W0
2210  M2=M2+Y(I)*W0
2220  M3=M3+X(I)*X(I)*W0
2230  M4=M4+Y(I)*Y(I)*W0
2240  M5=M5+Y(I)*X(I)*W0
2245  W1=W1+W0
2250 NEXT I
2260 C=W1*M3-M1^2
2270 P(10)=W1/C
2280 P(11)=M1/C
2290 P(12)=M3/C
2300 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2310 P(1)=(M2-P(2)*M1)/W1
2320 P(4)=P(1)
2330 P(5)=P(2)
2340 D=0
2350 FOR I=1 TO P(8)
2360  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2370 NEXT I
2380 P(23)=1-D/(M4-M2^2/P(8))
2390 P(3)=2
2400 P(6)=D/(P(8)-2)
2410 P(9)=1
2420 P(29)=1
2430 P(27)=P(6)
2440 FIND @U2:5
2450 PRINT @U2:"HRH ******P"
2460 PRINT @U2:D$,P
2470 PRINT @U2,2:
3000 FIND @U216
3010 PRINT "ENTER QL HISTORY FOR ,04"
3020 PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR ,04"
3030 INPUT M1
3040 PRINT "ENTER S.D.(OR STANDARD) FOR ,04"
3050 INPUT M2
3051 PRINT "ENTER LOWER LIMIT FOR ACCURACY"
3052 INPUT I
3053 00=I
3054 PRINT "ENTER UPPER LIMIT FOR ACCURACY"
3055 INPUT I
3056 01=I
3057 PRINT "ENTER LOWER LIMIT FOR PRECISION"
3058 INPUT I
3059 02=I
3060 PRINT "ENTER UPPER LIMIT FOR PRECISION"
```

```
3061 INPUT I
3062 03=I
3065 07=31
3070 K=0
3080 X0=0
3090 W=0
3100 Z=0
3110 M9=M1
3120 M8=M2
3200 PRINT @U2;"HQH QL,04**"
3210 PRINT @U2;K,07,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
4000 FIND @U217
4010 PRINT "ENTER QL HISTORY FOR .216"
4020 PRINT "ENTER MEAN (OR STANDARD) FOR .216"
4030 INPUT M1
4040 PRINT "ENTER S.D.(OR STANDARD) FOR .216"
4050 INPUT M2
4051 PRINT "ENTER LOWER LIMIT FOR ACCURACY"
4052 INPUT I
4053 00=I
4054 PRINT "ENTER UPPER LIMIT FOR ACCURACY"
4055 INPUT I
4056 01=I
4057 PRINT "ENTER LOWER LIMIT FOR PRECISION"
4058 INPUT I
4059 02=I
4060 PRINT "ENTER UPPER LIMIT FOR PRECISION"
4061 INPUT I
4062 03=I
4065 M9=M1
4070 M8=M2
4200 PRINT @U2;"HQH QL,216**"
4210 PRINT @U2;K,07,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
10000 PRINT @U2,2;
10010 CLOSE
10015 PRINT "INSERT PROGRAM TAPE INTO 4052"
10016 IN     A$
10020 FI.   1
10030 OLD

10040 REM END OF PROGRAM
```

FILE # 7

```
100 INIT
110 PRINT @32,26:0

120 REM
130 REM THIS PROGRAM IS SUPPOSED TO UPDATE THE HISTORY FILE BETWEEN
140 REM EACH DAILY RUN.  IT IS SUPPOSED TO LEAVE IN THE INFORMATION
150 REM ABOUT PREVIOUS DAYS SO THAT THE QC PLOTS WILL SHOW DAILY
160 REM PROGRESS.  IT IS SUPPOSED TO REMOVE THE INDIVIDUAL PLOT FILES
170 REM SO THAT A 'FRESH' HISTORY TAPE EACH DAY.
180 REM
190 REM   DATE:  05/04/81
200 REM AUTHOR:  COMPUTER SCIENCES CORPORATION
210 REM          ISAAC WILLY TRAXLER
220 REM          NSTL STATION, MS.
230 REM
240 REM
250 REM DO SOME PRELIMINARIES

260 U1=33
270 PAGE
280 PRINT ' BEGIN PROGRAM TO UPDATE HISTORY TAPE'
290 PRINT ' INSERT HISTORY TAPE INTO INTERNAL TAPE DRIVE'
300 PRINT ' MAKE SURE WRITE PROTECT IS NOT ON SAFE'
310 PRINT ' PRESS HOME PAGE TO START PROGRAM'
320 PRINT 'CKJ'
330 PRINT ' BEGIN PROCESSING'

340 REM  U1 - DEVICE NUMBER OF INTERNAL TAPE.DRIVE
350 REM  A$ - LINE 1 OF FILE 1
360 REM  B$ - LINE 2 OF FILE 1
370 REM  C$ - LINE 3 OF FILE 1
380 REM  D$ - LINE 4 OF FILE 1
390 REM  E$ - LINE 5 OF FILE 1
400 REM  F$ - LINE 6 OF FILE 1
410 REM  G$ - LINE 7 OF FILE 1
420 REM  I  - USED AS A TEMPORARY INDEX VARIABLE
430 REM
440 REM    *** SECTION TO UPDATE FILE 1 ***

450 FIND 1
460 INPUT @U1:A$
470 INPUT @U1:B$
480 INPUT @U1:C$
490 INPUT @U1:D$
500 INPUT @U1:E$
510 INPUT @U1:F$
520 INPUT @U1:G$
530 CLOSE
540 FIND 1
550 PRINT @U1:A$
560 PRINT @U1:B$
570 PRINT @U1:C$
580 PRINT @U1:D$
590 PRINT @U1:E$
600 PRINT @U1:F$
610  PRINT @U1:G$
620 CLOSE
```

```
640 REM PUT TAPE AT BEGINNING OF FILE

650 FIND 0

660 REM  *** SECTION FOR FILE 2 ***

670 FIND 2
680 PRINT @U1:"SYSTEM****"
690 CLOSE

700 REM  *** END OF FILE 2 SECTION ***
710 REM  FIND BEGINNING OF TAPE

720 FIND 0

730 REM  *** SECTION FOR FILE 3 ***

740 FIND 3
750 PRINT @U1:"PLOTFILES*"
760 CLOSE

770 REM  *** END OF SECTION FOR FILE 3 ***
780 REM FIND BEGINNING OF TAPE

790 FIND 0

800 REM  *** SECTION FOR FILE 4 ***

810 FIND 4
820 PRINT @U1:"PLOTSUC***"
830 CLOSE
840 PRINT
850 PRINT
860 PRINT
870 PRINT
880 PRINT
890 PRINT "TAPE PROCESSING FINISHED"
900 PRINT
910 PRINT "YOU MAY REMOVE THE TAPE NOW"
920 PRINT
930 PRINT "INSERT STATISTICS PROGRAM TAPE INTO INTERNAL TAPE DRIVE"
940 PRINT "PRESS 'HOME PAGE' TO CONTINUE"
950 PRINT "END"
960 FIND 1
970 OLD

980 REM END OF PROGRAM
```

FILE # 8

```
        100 DIM X(100),Y(100),P(2)
        101 PRINT "INSERT SCRATCH TAPE IN UNIT 11"
        102 FIND @11:0
        103 MARK @11:2,50000

        110 REM INIT

        120 FIND @11:1
        130 FIND @33:2
        200 INPUT @33:D$
        210 GOSUB 10000
+++1+++ 220 A=A1
        230 I0=I1
        240 D=D1
        250 N=1
        260 X(N)=T
        270 Y(N)=P0
+++1+++ 300 IF TYP(0)<>2 THEN 1000
        305 INPUT @33:D$
        310 GOSUB 10000
        320 IF A<>A1 OR I0<>I1 OR D<>D1 THEN 1000
        330 N=N+1
        340 X(N)=T
        350 Y(N)=P0
        360 GO TO 300
+++2+++ 1000 M1=0
        1010 M2=0
        1020 M3=0
        1030 M4=0
        1040 M5=0
        1050 FOR I=1 TO N
        1060   M1=M1+X(I)
        1070   M2=M2+Y(I)
        1080   M3=M3+X(I)*X(I)
        1090   M4=M4+Y(I)*Y(I)
        1100   M5=M5+Y(I)*X(I)
        1110 NEXT I
        1120 P(2)=(N*M5-M1*M2)/(N*M3-M1^2)
        1130 P(1)=(M2-P(2)*M1)/N
        1140 PRINT @11:D,I0,A,P(1),P(2)
        1150 IF TYP(0)=2 THEN 220

        1151 REM PARMS FOR 519 AND 520

        1152 PRINT @11:519,2,3,0.2956,65.99
        1153 PRINT @11:519,4,4,-0.0182,65.83
        1154 PRINT @11:520,3,3,-0.1192,65.22
        1155 PRINT @11:520,4,4,-0.6725,66.61
        1160 FIND 3
        1170 OLD

---2---  10000 REM GET CALIBRATION DATA

        10010 D$=SEG(B$,4,3)
        10020 D1=VAL(D$)
        10030 I$=SEG(B$,7,1)
```

```
10040 II=VAL(I$)
10050 A$=SEG(B$,27,1)
10060 A1=VAL(A$)
10070 P$=SEG(B$,20,6)
10080 P0=VAL(P$)
10090 T$=SEG(B$,14,6)
10100 T=VAL(T$)
10200 RETURN
```

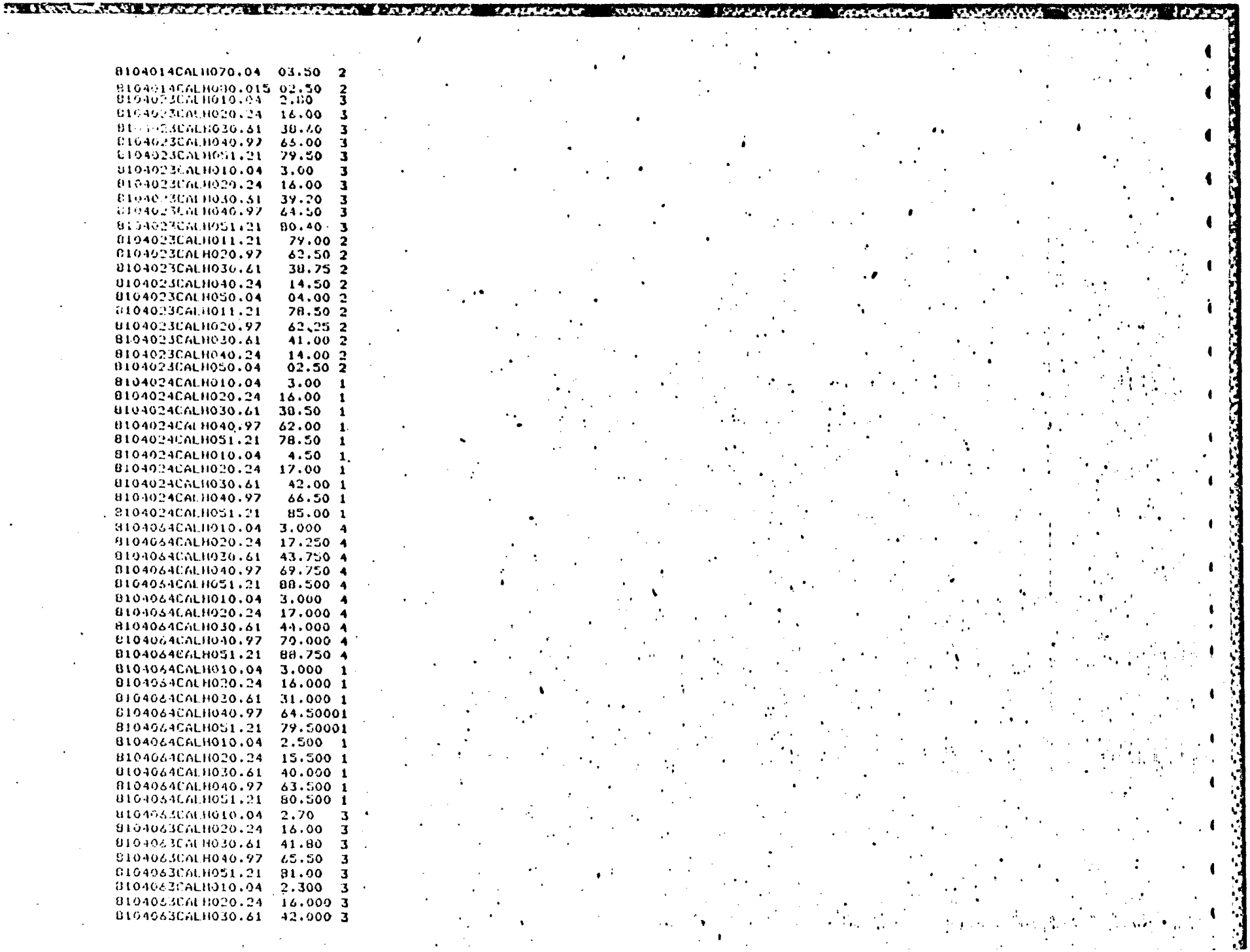
FILE # 9

```
8103263CALH010.015 1.000  1
8103263CALH020.04   2.500 1
8103263CALH030.17  10.500 1
8103263CALH040.24  15.25001
8103263CALH050.44  27.500 1
8103263CALH060.61  39.000 1
8103263CALH070.97  52.000 1
8103263CALH081.21  80.000 1
8103263CALH010.015 1.60   1
8103263CALH020.04  2.15   1
8103263CALH030.17  10.00  1
8103263CALH040.24  14.00  1
8103263CALH050.44  26.50  1
8103263CALH060.61  37.00  1
8103263CALH070.97  58.00  1
8103263CALH081.21  76.50  1
8103264CALH011.21  68.00  2
8103264CALH020.97  54.50  2
8103264CALH030.61  33.50  2
8103264CALH040.44  27.00  2
8103264CALH050.24  13.00  2
8103264CALH060.17  08.75  2
8103264CALH070.04  03.00  2
8103264CALH080.015 01.75  2
8103264CALH011.21  69.000 2
8103264CALH020.97  54.750 2
8103264CALH030.61  35.000 2
8103264CALH040.44  27.500 2
8103264CALH050.24  13.500 2
8103264CALH060.17  09.250 2
8103264CALH070.04  03.25  2
8103264CALH080.015 02.500 2
8103264CALH010.015 1.30   3
8103264CALH020.04  2.800  3
8103264CALH030.17  11.00  3
8103264CALH040.24  15.400 3
8103264CALH050.44  27.500 3
8103264CALH060.61  34.500 3
8103264CALH070.97  63.500 3
8103264CALH081.21  80.300 3
8103264CALH010.015 1.200  3
8103264CALH020.04  2.400  3
8103264CALH030.17  10.500 3
8103264CALH040.24   15.50 3
8103264CALH050.44  26.40  3
8103264CALH060.61  37.80  3
8103264CALH070.97  62.50  3
8103264CALH081.21  79.80  3
8103263CALH010.015 1.000  4
8103263CALH020.04  3.000  4
8103263CALH030.17  11.000 4
8103263CALH040.24  14.500 4
8103263CALH050.44  27.500 4
8103263CALH060.61  40.000 4
8103263CALH070.97  64.000 4
8103263CALH081.21  81.000 4
8103263CALH010.015 0.750  4
8103263CALH020.04  2.500  4
```

```
8103263CALH030.17  10.00  4
8103263CALH040.24  14.25  4
8103263CALH050.44  26.50  4
8103263CALH060.61  39.00  4
8103263CALH070.97  62.750 4
8103263CALH081.21  81.000 4
8103303CALH010.015 1.000  4
8103303CALH020.04  3.250  4
8103303CALH030.17  11.500 4
8103303CALH040.24  15.250 4
8103303CALH050.44  28.500 4
8103303CALH060.61  40.000 4
8103303CALH070.97  64.000 4
8103303CALH081.21  81.50  4
8103303CALH010.015 0.75   4
8103303CALH020.04  2.75   4
8103303CALH030.17  10.500 4
8103303CALH040.24  13.500 4
8103303CALH050.44  25.000 4
8103303CALH060.61  36.500 4
8103303CALH070.97  61.000 4
8103303CALH081.21  79.250 4
8103304CALH010.015 1.200  3
8103304CALH020.04  2.800  3
8103304CALH030.17  11.500 3
8103304CALH040.24  14.000 3
8103304CALH050.44  28.600 3
8103304CALH060.61  40.500 3
8103304CALH070.97  64.000 3
8103304CALH081.21  82.000 3
8103304CALH010.015 1.200  3
8103304CALH020.04  3.200  3
8103304CALH030.17  10.50  3
8103304CALH040.24  14.50  3
8103304CALH050.44  28.80  3
8103304CALH060.61  39.50  3
8103304CALH070.97  63.00  3
8103304CALH081.21  78.00  3
8103304CALH011.21  77.50  2
8103304CALH020.97  59.50  2
8103304CALH030.61  37.50  2
8103304CALH040.44  26.00  2
8103304CALH050.24  13.25  2
8103304CALH060.17  10.00  2
8103304CALH070.04  02.50  2
8103304CALH080.015 00.50  2
8103304CALH011.21  77.00  2
8103304CALH020.97  63.00  2
8103304CALH030.61  40.00  2
8103304CALH040.44  27.00  2
8103304CALH050.24  16.50  2
8103304CALH060.17  13.50  2
8103304CALH070.04  04.50  2
8103304CALH080.015 03.50  2
8103313CALH010.015 1.000  4
8103313CALH020.04  2.500  4
8103313CALH030.17  11.000 4
8103313CALH040.24  15.500 4
8103313CALH050.44  30.000 4
8103313CALH060.61  40.000 4
```

```
B103313CALH070.97  64.000 4
B103313CALH081.21  79.000 4
B103313CALH010.015 1.250  4
B103313CALH020.04  2.500  4
B103313CALH030.17  10.000 4
B103313CALH040.24  15.000 4
B103313CALH050.44  29.000 4
B103313CALH060.61  39.000 4
B103313CALH070.97  63.000 4
B103313CALH081.21  77.500 4
B103313CALH010.015 1.00   1
B103313CALH020.04  2.50   1
B103313CALH030.17  11.00  1
B103313CALH040.24  15.00  1
B103313CALH050.44  30.00  1
B103313CALH060.61  40.00  1
B103313CALH070.97  64.00  1
B103313CALH081.21  79.00  1
B103313CALH010.015 1.00   1
B103313CALH020.04  2.50   1
B103313CALH030.17  10.50  1
B103313CALH040.24  15.00  1
B103313CALH050.44  28.00  1
B103313CALH060.61  39.00  1
B103313CALH070.97  64.00  1
B103313CALH081.21  81.00  1
B103314CALH010.015 1.20   3
B103314CALH020.04  2.700  3
B103314CALH030.17  10.90  3
B103314CALH040.24  15.60  3
B103314CALH050.44  29.90  3
B103314CALH060.61  39.20  3
B103314CALH070.97  63.50  3
B103314CALH081.21  77.80  3
B103314CALH010.015 1.600  3
B103314CALH020.04  3.200  3
B103314CALH030.17  10.200 3
B103314CALH040.24  12.600 3
B103314CALH050.44  27.600 3
B103314CALH060.61  36.000 3
B103314CALH070.97  61.50  3
B103314CALH081.21  75.600 3
B103314CALH011.21  76.00  2
B103314CALH020.97  63.50  2
B103314CALH030.61  38.50  2
B103314CALH040.44  28.00  2
B103314CALH050.24  16.00  2
B103314CALH060.17  11.00  2
B103314CALH070.04  04.00  2
B103314CALH000.015 01.75  2
B103314CALH011.21  76.00  2
B103314CALH020.97  61.25  2
B103314CALH030.61  37.50  2
B103314CALH040.44  26.75  2
B103314CALH050.24  14.50  2
B103314CALH060.17  10.00  2
B103314CALH070.04  03.00  2
B103314CALH000.015 01.00  2
B104013CALH010.015 1.500  4
B104013CALH020.04  3.250  4
```

```
8104013CALH030.17  10.500 4
8104013CALH040.24  16.500 4
8104013CALH050.44  30.250 4
8104013CALH060.61  42.500 4
8104013CALH070.97  63.75  4
8104013CALH081.21  81.500 4
8104013CALH010.015 1.250  4
8104013CALH020.04  3.000  4
8104013CALH030.17  10.250 4
8104013CALH040.24  15.000 4
8104013CALH050.44  29.000 4
8104013CALH060.61  40.500 4
8104013CALH070.97  66.000 4
8104013CALH081.21  83.500 4
8104013CALH010.015 1.00   1
8104013CALH020.04  2.50   1
8104013CALH030.17  13.00  1
8104013CALH040.24  18.00  1
8104013CALH050.44  35.00  1
8104013CALH060.61  41.00  1
8104013CALH070.97  63.00  1
8104013CALH081.21  80.00  1
8104013CALH010.015 2.00   1
8104013CALH020.04  3.00   1
8104013CALH030.17  13.00  1
8104013CALH040.24  16.00  1
8104013CALH050.44  32.00  1
8104013CALH060.61  43.00  1
8104013CALH070.97  67.00  1
8104013CALH081.21  86.00  1
8104014CALH010.015 1.200  3
8104014CALH020.04  3.000  3
8104014CALH030.17  12,700 3
8104014CALH040.24  15.500 3
8104014CALH050.44  26.200 3
8104014CALH060.61  38.000 3
8104014CALH070.97  64.000 3
8104014CALH081.21  82.000 3
8104014CALH010.015 1.800  3
8104014CALH020.04  4.000  3
8104014CALH030.17  13.200 3
8104014CALH040.24  16.500 3
8104014CALH050.44  26.000 3
8104014CALH060.61  38.700 3
8104014CALH070.97  67.800 3
8104014CALH081.21  81.200 3
8104014CALH011.21  80.00  2
8104014CALH020.97  61.75  2
8104014CALH030.61  38.25  2
8104014CALH040.44  28.00  2
8104014CALH050.24  18.50  2
8104014CALH060.17  10.50  2
8104014CALH070.04  03.00  2
8104014CALH[illegible]0.015 01.25  2
8104014CALH[illegible]1.21  77.00  2
8104014CALH[illegible]0.97  64.00  2
8104014CALH030.61  41.00  2
8104014CALH040.44  27.50  2
8104014CALH050.24  15.00  2
8104014CALH060.17  13.25  2
```



```
B104014CALH070.04  03.50  2
B104014CALH080.015 02.50  2
B104023CALH010.04  2.00   3
B104023CALH020.24  16.00  3
B104023CALH030.61  38.40  3
B104023CALH040.97  66.00  3
B104023CALH051.21  79.50  3
B104023CALH010.04  3.00   3
B104023CALH020.24  16.00  3
B104023CALH030.61  39.20  3
B104023CALH040.97  64.50  3
B104023CALH051.21  80.40  3
B104023CALH011.21   79.00 2
B104023CALH020.97   62.50 2
B104023CALH030.61   38.75 2
B104023CALH040.24   14.50 2
B104023CALH050.04   04.00 2
B104023CALH011.21   78.50 2
B104023CALH020.97   62.25 2
B104023CALH030.61   41.00 2
B104023CALH040.24   14.00 2
B104023CALH050.04   02.50 2
B104024CALH010.04   3.00  1
B104024CALH020.24   16.00  1
B104024CALH030.61   38.50  1
B104024CALH040.97   62.00  1
B104024CALH051.21   78.50  1
B104024CALH010.04   4.50  1
B104024CALH020.24   17.00  1
B104024CALH030.61   42.00 1
B104024CALH040.97   66.50 1
B104024CALH051.21   85.00 1
B104064CALH010.04  3.000  4
B104064CALH020.24  17.250 4
B104064CALH030.61  43.750 4
B104064CALH040.97  69.750 4
B104064CALH051.21  88.500 4
B104064CALH010.04  3.000  4
B104064CALH020.24  17.000 4
B104064CALH030.61  44.000 4
B104064CALH040.97  70.000 4
B104064CALH051.21  88.750 4
B104064CALH010.04  3.000  1
B104064CALH020.24  16.000 1
B104064CALH030.61  31.000 1
B104064CALH040.97  64.50001
B104064CALH051.21  79.50001
B104064CALH010.04  2.500  1
B104064CALH020.24  15.500 1
B104064CALH030.61  40.000 1
B104064CALH040.97  63.500 1
B104064CALH051.21  80.500 1
B104063CALH010.04  2.70   3
B104063CALH020.24  16.00  3
B104063CALH030.61  41.80  3
B104063CALH040.97  65.50  3
B104063CALH051.21  81.00  3
B104063CALH010.04  2.300  3
B104063CALH020.24  16.000 3
B104063CALH030.61  42.000 3
```

```
8104063CALH040.97   66.000 3
8104063CALH051.21   81.500 3
8104063CALH011.21   81.50  2
8104063CALH020.97   64.50  2
8104063CALH030.61   40.50  2
8104063CALH040.24   15.50  2
8104063CALH050.04   03.00  2
8104063CALH011.21   82.50  2
8104063CALH020.97   66.00  2
8104063CALH030.61   41.00  2
8104063CALH040.24   17.00  2
8104063CALH050.04   04.00  2
8104084CALH010.04   2.750  4
8104084CALH020.24   15.000 4
8104084CALH030.61   40.000 4
8104084CALH040.97   63.500 4
8104084CALH051.21   80.000 4
8104084CALH010.04   03.000 4
8104084CALH020.24   15.500 4
8104084CALH030.61   41.000 4
8104084CALH040.97   66.000 4
8104084CALH051.21   80.000 4
8104084CALH010.04   3.000  1
8104084CALH020.24   15.250 1
8104084CALH030.61   40.250 1
8104084CALH040.97   65.250 1
8104084CALH051.21   81.000 1
8104084CALH010.04   2.500  1
8104084CALH020.24   15.000 1
8104084CALH030.61   40.000 1
8104084CALH040.97   64.000 1
8104084CALH051.21   79.500 1
8104083CALH010.04   3.000  3
8104083CALH020.24   16.000 3
8104083CALH030.61   40.500 3
8104083CALH040.97   64.300 3
8104083CALH051.21   80.800 3
8104083CALH010.04   2.800  3
8104083CALH020.24   16.800 3
8104083CALH030.61   41.500 3
8104083CALH040.97   65.000 3
8104083CALH051.21   83.500 3
8104083CALH011.21   82.00  2
8104083CALH020.97   66.00  2
8104083CALH030.61   42.25  2
8104083CALH040.24   16.00  2
8104083CALH050.04   03.00  2
8104083CALH011.21   83.00  2
8104083CALH020.97   66.00  2
8104083CALH030.61   41.25  2
8104083CALH040.24   16.00  2
8104083CALH050.04   03.25  2
8104094CALH010.04   2.500  4
8104094CALH020.24   15.000 4
8104094CALH030.61   39.000 4
8104094CALH040.97   62.500 4
8104094CALH051.21   78.500 4
8104094CALH010.04   3.000  4
8104094CALH020.24   15.500 4
8104094CALH030.61   40.000 4
```

```
B104094CALH040.97   64.000 4
B104094CALH051.21   79.500 4
B104094CALH010.04    2.50  1
B104094CALH020.24   16.500 1
B104094CALH030.61   39.500 1
B104094CALH040.97   64.000 1
B104094CALH051.21   79.500 1
B104094CALH010.04    4.500 1
B104094CALH020.24   15.000 1
B104094CALH030.61   42.500 1
B104094CALH040.97   64.00  1
B104094CALH051.21   80.000 1
B104093CALH010.04    2.800 3
B104093CALH020.24   15.500 3
B104093CALH030.61   40.500 3
B104093CALH040.97   65.500 3
B104093CALH051.21   83.500 3
B104093CALH010.04    2.600 3
B104093CALH020.24   15.000 3
B104093CALH030.61   40.500 3
B104093CALH040.97   66.000 3
B104093CALH051.21   83.500 3
B104093CALH011.21   80.75  2
B104093CALH020.97   64.75  2
B104093CALH030.61   40.50  2
B104093CALH040.24   15.25  2
B104093CALH050.04   02.50  2
B104093CALH011.21   83.00  2
B104093CALH020.97   69.00  2
B104093CALH030.61   40.25  2
B104093CALH040.24   15.75  2
B104093CALH050.04   02.75  2
B104104CALH010.04    3.200 3
B104104CALH020.24   14.000 3
B104104CALH030.61   39.200 3
B104104CALH040.97   63.500 3
B104104CALH051.21   80.000 3
B104104CALH010.04    2.800 3
B104104CALH020.24   15.200 3
B104104CALH030.61   39.000 3
B104104CALH040.97   63.500 3
B104104CALH051.21   80.000 3
B104103CALH011.21   83.50  2
B104103CALH020.97   67.25  2
B104103CALH030.61   41.00  2
B104103CALH040.24   16.00  2
B104103CALH050.04   02.25  2
B104103CALH011.21   84.00  2
BI 9      NEW
```

THE FOLLOWING LINE NUMBERS ARE BRANCHED TO BUT DO NOT EXIST IN THIS TAPE FILE (# 9)
A "-" BEFORE THE LINE NUMBER INDICATES IT IS BRANCHED TO AS A SUBROUTINE (VIA A "GOSUB" OR "ON")

B

FILE # 1

```
++++1+++  100 INIT
          110 U3=32
          120 PRINT @U3,25;0
          130 PAGE
          140 PRINT "JJ"
          150 PRI "       S T*A T I S T I C S   P R O G R A M   D I R E C T O R Y"
          160 PRI "       - - - - - - - - - - - - - - - - - - - - - - - - - - - -"
          170 PRINT "JJOPTION                          FUNCTION"
          180 PRINT "------                           --------"
          190 PRINT "J     1       CREATE A NEW HISTORY TAPE"
          200 PRINT "      2       REFRESH HISTORY TAPE"
          210 PRINT "      3       RUN STATISTICS PROGRAMS"
          220 PRINT "      4       STOP"
          230 PRINT "JJJJ    WHICH OPTION>  (1,2,3,4)"
++++1+++  240 INPUT A$
          250 IF A$="" THEN 240
          260 A=VAL(A$)
          270 IF A<1 OR A>4 THEN 100
          280 A=INT(A)
          290 GO TO A OF 300,400,500,600
++++1+++  300 FIND 0
          310 FIND 6
          320 OLD
++++1+++  400 FIND 0
          410 FIND 7
          420 OLD
++++1+++  500 FIND 0
          510 FIND 5
          520 OLD
++++1+++  600 END
```

GB

FILE # 2

```
100 INIT

110 REM MAKE SURE SCREEN DOES NOT AUTOMATICALLY PAGE WHEN FULL

120 PRINT @32,26;0

130 REM ASSIGN DEVICE NUMBERS;FIND FILE 2 OF HISTORY TAPE;SKIP RECORD

140 U1=33
150 U2=11
160 FIND @U2;0
170 FIND @U2;2
180 INPUT @U2;U1,D$
190 DIM Z$(25),D$(20),C$(2),F$(10),E$(72),T$(127),B$(127)
200 DIM M;(6),Y$(30),X$(30),R$(2),A$(6),N$(1),S$(1),W$(7)
210 R$="  "
220 DIM X1(32),Y1(32),X2(32),Y2(32),N2(32),B6(32),N0(8),P(34),B7(32)
230 DIM S(8),M6(8),M7(8),M8(8),M9(8),P0(34)
240 DIM T7(40)
250 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.366,2.307,2.262,2.228
260 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
270 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
280 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2.023,2.022
290 READ T7
300 E$=" "
310 FOR I=1 TO 71
320   E$=E$&" "
330 NEXT I

340 REM*
350 REM*INITIALIZE PLOTFILES
360 REM*

370 F$="PLOTFILES"

380 REM CHECK HISTORY TAPE HEADER AND GET N9

390 GOSUB 60000
400 FIND @U2;N9
410 PRINT @U2;F$
420 PRINT @U2,2;

430 REM* INITIALIZE PLOT FILES

440 F$="PLOTSQC"
450 GOSUB 60000
460 FIND @U2;N9
470 PRINT @U2;F$
480 PRINT @U2,2;
490 PRINT "CCCCCCCC"
500 PRINT "INSERT RMA TAPE IN 4051"
510 PRINT "ENTER THE LABEL ON THE RMA DATA TAPE"
520 INPUT Z$
530 FIND @U1;1
540 A=TYP(0)
550 IF A=1 THEN 500
560 INPUT @U1;Y$
570 IF LEN(Z$)<13 THEN 610
```

```
          500 DIM Z$(13),Y$(13)
          590 IF Y$=Z$ THEN 640
          600 PRINT "LABEL ON TAPE IS ";Y$
+++1+++   610 PRINT "WRONG RMA TAPE OR WRONG LABEL GGGGGGGGGGGGGGGGGGGGGGGGGG"
          620 PAGE
          630 GO TO 500
+++1+++   640 INPUT @U1:B$
          650 M$=SEG(B$,18,2)
          660 PRINT "DATA IS BEING PROCESSED"
          670 GOSUB 1000
          675 PRINT "2KJ"
          680 PRINT "GGGGGGGG"
          690 PRINT "INSERT PROGRAM TAPE IN 4051"
          700 PRINT "2KJ"
          710 FIND @U1:3
          720 OLD
-------------------------------------------------------------------------------
---1---   1000 DIM M$(2)

          1010 REM M$ is used to hold name of agent

          1020 M$="GB"
          1030 PRINT "This program processes agent ";M$;" ONLY"
          1040 PRINT "Enter serial number (n)"
          1050 INPUT N%
          1060 PRINT "Enter the analyst's initials (aaa)"
          1070 INPUT V$

          1072 REM   DEFAULT TRANSFORM FOR GB

          1074 O0=2
          1076 GO TO 1152
+++1+++   1080 PRINT " TRANSFORM OPTIONS FOR CALIBRATION"
          1090 PRINT "  1  X = ln(X)"
          1100 PRINT "  2  Y = ln(Y)"
          1110 PRINT "  3  no transform"
          1120 PRINT "J ENTER OPTION (1,2,3)"
          1130 INPUT O0
          1140 IF O0<1 OR O0>3 THEN 1080

          1150 REM Process Calibration Data

+++1+++   1152 P=0
          1154 P(3)=O0
          1155 GO TO O0 OF 1156,1158,1170
+++1+++   1156 P(32)=1
          1157 GO TO 1170
+++1+++   1158 P(31)=103

          1160 REM skip header record

+++2+++   1170 FIND @U1:1
          1180 INPUT @U1:B$

          1190 REM  use N to count records

          1200 N=0

          1210 REM  check for end of file
```

```
+++3+++  1220 A=TYP(0)
         1230 IF A<> 2 THEN 1370
         1240 INPUT @U1;B$
         1250 GOSUB 5000
         1260 IF A <>1 THEN 1220
         1265 T$=B$
         1270 X$=SEG(B$,2,7)
         1280 C$=SEG(X$,1,2)
         1290 IF C$="NA" THEN 1220
         1300 N=N+1

         1310 REM Load calibration data into X2 and Y2

         1320 X2(N)=VAL(X$)
         1330 X$=SEG(B$,48,7)
         1340 Y2(N)=VAL(X$)
         1350 GO TO 1220

         1360 REM now load transformed data into X1,Y1

+++4+++  1370 B$=T$
         1380 GO TO 00 OF 1400,1500,1600

         1390 REM X=ln(X) transform

+++5+++  1400 FOR I=1 TO N
         1410   Y1(I)=Y2(I)*P(31)
         1420   X1(I)=LOG(X2(I)*P(32))
         1430 NEXT I
         1440 GO TO 1620

         1490 REM  Y=ln(Y)

+++6+++  1500 FOR I=1 TO N
         1510   X1(I)=X2(I)*P(32)
         1520   Y1(I)=LOG(Y2(I)*P(31))
         1530 NEXT I
         1540 GO TO 1620

         1592 REM no transformation

+++7+++  1600 FOR I=1 TO N
         1610   X1(I)=X2(I)*P(32)
         1620   Y1(I)=Y2(I)*P(31)
         1630 NEXT I

         1640 REM  end of load routine
         1650 REM Process Calibration Data

+++8+++  1660 PRINT "Processing Calibration Data for ";M$
         1670 M1=0
         1680 M2=0
         1690 M3=0
         1700 M4=0
         1710 M5=0
         1720 M6=0
         1730 M7=0
         1740 M8=0
         1750 M9=0
         1760 M0=0
         1770 M1=0
```

```
1780 M5=0
1790 P(8)=N
1800 FOR I=1 TO N
1810  M1=M1+X1(I)
1820  M2=M2+Y1(I)
1830  M3=M3+X1(I)*X1(I)
1840  M4=M4+Y1(I)*Y1(I)
1850  M5=M5+X1(I)*Y1(I)
1860 NEXT I
1870 C=P(8)*M3-M1*M1
1880 P(10)=P(8)/C
1890 P(11)=M1/C
1900 P(12)=M3/C
1910 P(2)=(P(8)*M5-M1*M2)/(P(8)*M3-M1*M1)
1920 P(1)=(M2-P(3)*M1)/P(8)
1930 P(4)=P(1)
1940 P(5)=P(2)
1950 D=0
1960 FOR I=1 TO P(8)
1970  D=D+(Y1(I)-P(1)-P(2)*X1(I))^2
1980 NEXT I
1990 P(23)=1-D/(M4-M2*M2/P(8))
2010 P(6)=D/(P(8)-2)
2020 P(9)=1
2030 P(29)=1
2040 P(27)=P(6)
2050 L$="Calibration of Instrument Response "$V$
2060 L$=L$$" - "
2070 L$=L$$W$
2080 DIM Y$(30)
2090 X$="CONCENTRATION"
2100 Y$="INSTRUMENT RESPONSE"
2110 B$=SEG(B$,14,2)
2120 B$=B$$"/"
2130 W$=SEG(B$,12,2)
2140 B$=B$$W$
2150 B$=B$$"/"
2160 W$=SEG(B$,16,2)
2170 B$=B$$W$
2180 GOSUB 61000
2190 F0=P

2192 REM    GET PARAMETER FOR T VS F

2194 F$="HR"$M$
2196 GOSUB 60000
2198 INPUT @U2:B$,P
2204 P(31)=0
2206 P(32)=0
2208 P(3)=3

2210 REM Process QL & QP data
2220 REM GOSUB 16000

2230 Q$="QL"
2235 P7=1
2240 S=1.6
2250 GOSUB 7000
2260 GOSUB 3500
2270 GOSUB 3750
```

```
         2280 D$="DP"
         2285 D7=0.9
         2290 GOSUB 7000
         2300 GOSUB 3500
         2310 GOSUB 3750

         2320 REM Input Actual Data

         2330 N=0
         2340 FIND @U1:1
         2350 INPUT @U1:B$
+++3+++  2360 A=TYP(0)
         2370 IF A<>2 THEN 2460
         2380 INPUT @U1:B$
         2390 GOSUB 5000
         2400 IF A<>1 THEN 2360
         2405 I$=I$
         2410 Y$ SEG(I$,118,2)
         2420 IF Y$<>"PL" THEN 2360
         2430 N=1+N
         2440 GOSUB 10000
         2450 GO TO 2360
+++1+++  2460 E$=I$
         2470 RETURN

         2999 REM Determine Groups

-------------------------------------------------------------------------------

---2---  3000 K=0
         3010 N2=0
+++2+++  3020 FOR J1=1 TO N
         3030   IF N2(J1)=0 THEN 3180
         3040 NEXT J1
+++1+++  3050 N7=0
         3060 FOR J=1 TO N
         3070   IF N2(J)=-1 THEN 3090
         3080   N7=N7+1
+++1+++  3090 NEXT J

         3100 REM Determine number in each group

         3110 N0=0
         3120 IF N=0 THEN 3170
         3130 FOR J=1 TO N
         3140   IF N2(J)=-1 THEN 3160
         3150   N0(N2(J))=1+N0(N2(J))
+++1+++  3160 NEXT J
+++1+++  3170 RETURN
+++2+++  3180 IF J1=N THEN 3210
         3190 N2(N)=-1
         3200 GO TO 3050
+++1+++  3210 K=K+1
         3220 N2(J1)=K
         3230 J2=J1
         3240 J3=X1(J1)
         3250 J4=J3*J3
         3260 FOR J=J1+1 TO N
         3270   IF N2(J)<>0 OR X1(J)<>X1(J1) THEN 3410
```

```
          3290  J2=1+J2
          3300  J3=J3+Y1(J)
          3400  J4=J4+Y1(J)*Y1(J)
+++1+++   3410 NEXT J
          3420 J5=J4-J3*J3/J2
          3430 IF J2<>1 AND J5<>0 THEN 3020
          3440 FOR J=1 TO N
          3450  IF N2(J)<>K THEN 3470
          3460  N2(J)=-1
+++1+++   3470 NEXT J
          3480 K=K-1
          3490 GO TO 3020

          3498 REM     QC
          3499 REM X1(N2(I))    P(25),P(26)
-------------------------------------------------------------------------------

---2---   3500 S1=0
          3510 S2=0
          3520 J=0
          3530 IF N>0 THEN 3580
          3540 P(25)=0
          3550 P(26)=0
          3560 P(28)=0
          3570 GO TO 3660
+++1+++   3580 FOR I=1 TO N
          3590  J=1+J

          3593  REM   ADJUSTMENT FOR CALCULATED RECOVERY

          3595  X1(I)=X1(I)/07
          3600  S1=S1+X1(I)
          3610  S2=S2+X1(I)*X1(I)
          3620 NEXT I
          3630 P(25)=S1/J
          3640 P(28)=J
          3642 06=S2/J-P(25)*P(25)
          3644 IF 06<1.0E-6 THEN 3650
          3645 P(26)=0
          3648 RETURN
+++1+++   3650 P(26)=SQR(S2/J-P(25)*P(25))
+++1+++   3660 RETURN

          3749 REM update PLOTSQC
-------------------------------------------------------------------------------

---2---   3750 F$="PLOTSQC"
          3760 GOSUB 60000
+++1+++   3770 INPUT @02,6:A
          3780 IF A<>2 THEN 3810
          3790 INPUT @02:B$
          3800 GO TO 3770
+++1+++   3810 B$=MID$(B$
          3820 B$=B$+"1.60"
          3830 PRINT @02:B$
          3840 PRINT @02:B$
          3870 PRINT @02:B$
          3880 PRINT @02:C,P(25),P(26),P(28)
```

```
         3890 PRINT @U2,21
         3900 RETURN

         4999 REM check for acceptable record
-------------------------------------------------------------------------------
---3---  5000 A=1
         5010 X$=SEG(B$,6,1)

         5020 REM see if it is data or comment record

         5030 IF X$<>"1" AND X$<>"3" THEN 5130
         5040 X$=SEG(B$,18,2)

         5050 REM check agent code

         5060 IF X$<>M$ THEN 5130
         5070 X$=SEG(B$,20,1)

         5080 REM check serial number

         5090 IF X$<>N$ THEN 5130
         5100 X$=SEG(B$,87,3)

         5110 REM check analyst's initials

         5120 IF X$=V$ THEN 5140
+++3+++  5130 A=0
+++1+++  5140 RETURN

         5999 REM GROUP MOVEMENTS
-------------------------------------------------------------------------------
---1---  6000 N7=0
         6010 M6=0
         6020 M7=0
         6030 M8=0
         6040 M9=0
         6050 FOR I=1 TO N
         6060  IF N2(I)<1 THEN 6130
         6070  N7=1+N7
         6090  M6(N2(I))=M6(N2(I))+X1(I)
         6100  M7(N2(I))=M7(N2(I))+Y1(I)
         6110  M8(N2(I))=M8(N2(I))+X1(I)*X1(I)
         6120  M9(N2(I))=M9(N2(I))+Y1(I)*Y1(I)
+++1+++  6130 NEXT I
         6140 RETURN

         6999 REM Get data for QL & QP
-------------------------------------------------------------------------------
---3---  7000 N=0
         7010 FIND @U1:0
         7020 FIND @U1:1
         7030 INPUT @U1:B$
+++5+++  7040 A=TYP(0)
```

```
          7060 INPUT #U1:B$
          7070 GOSUB 5000
          7080 IF A<>1 THEN 7040
          7090 W$=SEG(B$,118,2)

          7100 REM###  IF Q$="  " AND (W$="QP" OR W$="QL") THEN 7130

          7110 IF W$<>Q$ THEN 7040

          7120 REMcheck for control concentration

          7130 Y$=SEG(B$,97,7)
          7140 IF C=0 THEN 7160
          7150 IF VAL(Y$)<>C THEN 7040
+++1+++   7160 Y$=SEG(B$,48,7)
          7170 Y=VAL(Y$)

          7175 REM   Calibrate QC Data

          7180 ON U0 OF 7260,7190,7290
+++1+++   7190 Y=LOG(-Y+P0(31))
          7230 X=(Y-P0(1))/P0(2)-P0(32)
          7240 GO TO 7310

          7250 REM case 2   X=ln(X)

+++1+++   7260 X=EXP((Y-P0(1)+P0(31))/P0(2))-P0(32)
          7270 GO TO 7310

          7280 REM case 3   no transform

+++1+++   7290 X=(Y-P0(1))/P0(2)-P0(31)

          7300 REM end of case statement based on transformation

+++2+++   7310 W$=SEG(B$,62,7)
          7315 IF W$="NA     " THEN 7040
          7320 X=X*VAL(W$)
          7330 Y$=SEG(B$,97,7)
          7340 Y=VAL(Y$)
          7350 N=1+N
          7360 X1(N)=X
          7370 X2(N)=X
          7380 Y1(N)=Y
          7390 Y2(N)=Y
          7400 GO TO 7040
+++1+++   7410 RETURN

          9998 REM get actual data from B$
          9999 REM Peak Heights

-----------------------------------------------------------------------------

---1---   10000 Y$=SEG(B$,48,7)
          10010 Y0=VAL(Y$)
          10020 ON U0 OF 10120,10040,10150

          10030 REM  case 1     Y=ln(Y)

+++1+++   10040 Y0=LOG(-Y0+P0(31))
```

```
        10090 X0=(Y0-P0(1))/P0(2)-P0(32)
        10100 GO TO 10170

        10110 REM  case 2     X=ln(X)

+++1+++ 10120 X0=EXP((Y0+P0(31)-P0(1))/P0(2))-P0(32)
        10130 GO TO 10170

        10140 REM  case 3     no transform

+++1+++ 10150 X0=(Y0+P0(31)-P0(1))/P0(2)-P0(32)

        10160 REM  end of case statement  on 00

+++2+++ 10170 Y0=X0
        10172 X0=(X0-P(1))/P(2)
        10175 X0=X0/0.9
        10180 GOSUB 15000

        10185 REM  GET DILUTION

        10190 X$=SEG(B$,62,7)
        10200 Q0=VAL(X$)

        10205 REM GET BUBBLER VOLUME

        10210 X$=SEG(B$,69,7)
        10220 Q0=Q0*VAL(X$)

        10230 REM Get Time

        10240 X$=SEG(B$,126,2)
        10250 Y$=SEG(B$,122,2)
        10260 X=VAL(X$)
        10270 Y=VAL(Y$)
        10280 Z=X-Y
        10290 X$=SEG(B$,124,2)
        10300 Y$=SEG(B$,120,2)
        10310 X=VAL(X$)
        10320 Y=VAL(Y$)
        10322 IF X>=Y THEN 10330
        10325 X=X+24
+++1+++ 10330 Z=(X-Y)*60+Z

        10340 REM  Get Airflow

        10350 Y$=SEG(B$,90,7)
        10360 Y=VAL(Y$)
        10370 X0=X0*Q0/(Y*Z)*1.0E-3
        10380 L0=L0*Q0/(Y*Z)*1.0E-3
        10390 U0=U0*Q0/(Y*Z)*1.0E-3

        10400 REM Print out Actual Data

        10410 F$=B$
        10420 IF INT((N-1)/20)*20<>N-1 THEN 10630
        10430 B$=E$
        10440 B$=REP("Actual Data for ",24,14)
        10450 B$=REP(M$,40,2)
        10460 B$=REP("Date:",52,5)
```

```
          10470 B$=REP(D$,58,8)
          10480 PRINT "[K]"
          10490 PRINT "J";B$
          10500 B$=E$
          10510 B$=REP('Agent Concentration',29,19)
          10520 PRINT "JJ";B$
          10530 B$=E$
          10540 B$=REP('------------------------------',24,29)
          10550 PRINT B$
          10560 B$=E$
          10570 B$=REP('Sample Location',5,15)
          10580 B$=REP('True',25,4)
          10590 B$=REP('Lower 95%',32,9)
          10600 B$=REP('Upper 95%',44,9)
          10605 B$=REP('TIME',59,4)
          10610 PRINT B$

          10620 REM  Print Data

++++1+++  10630 B$=E$
          10640 X$=SEG(T$,21,6)
          10650 B$=REP(X$,5,6)
          10660 X$=SEG(T$,116,2)
          10670 B$=REP(X$,15,2)
          10680 L$=STR(X0)
          10690 GOSUB 58000
          10700 IF X0=>1.0E-3 THEN 10730
          10710 L$=L$$'*'
          10720 U0=1+U0
++++1+++  10730 B$=REP(L$,24,U0)
          10740 IF X0<1.0E-4 THEN 10822
          10750 L$=STR(U0)
          10760 GOSUB 58000
          10770 GOSUB 14000
          10780 B$=REP(L$,34,U0)
          10790 L$=STR(L0)
          10800 GOSUB 58000
          10810 GOSUB 14000
          10820 B$=REP(L$,46,U0)
++++1+++  10822 L$=SEG(T$,120,4)
          10824 B$=REP(L$,56,4)
          10826 L$=SEG(T$,124,4)
          10828 B$=REP(L$,62,4)
          10830 PRINT B$
          10840 RETURN

          13999 REM check if data is from location "DR","CR","RA","LA"
-------------------------------------------------------------------------------------------

---2---   14000 Y$=SEG(T$,116,2)
          14010 IF Y$="DR" OR "CR"=Y$ OR Y$="RA" OR Y$="LA" THEN 14030
          14020 L$=SEG(E$,1,U0)
+++1+++   14030 RETURN

          14995 REM    Solve Linear Regression in Reverse
          14996 REM    for Upper and Lower Confidence Limits
          14997 REM    Y0,X0       L0,U0
          14998 REM    T-VALUES    L=0.025    U=0.975
```

```
---1---   15000 X7=X0
          15010 U0=0

          15020 REM  Transform Y0

          15030 Y0=(Y0+P(31))^P(29)
          15040 Y7=Y0
          15042 IF P(8)<42 THEN 15050

          15043 REM T-VALUE

          15044 T3=3.8416#P(6)
          15046 GO TO 15060
++++++    15050 T3=T7(P(8)-2)^2#P(6)
++++++    15060 A1=P(2)#P(2)-P(10)#T3
          15070 B1=P(2)#(Y7-P(1))-P(11)#T3
          15080 A9=(X7+P(30))^P(7)
          15090 B3=0
          15100 A2=A9+P(12)
          15110 B2=Y7-P(1)
          15120 A3=T3#(P(11)^2-P(10)#A2)+P(2)#P(2)#A2+B2#(P(10)#B2-2#P(2)#P(11))
          15125 IF A3<0 THEN 15190
          15127 IF P(8)>42 THEN 15134
          15130 B3=T7(P(8)-2)#SQR(A3#P(6))
          15132 GO TO 15140
++++++    15134 B3=1.96#SQR(A3#P(6))
++++++    15140 X7=(B1+B3)/A1
          15150 L0=X7-P(32)
          15160 X7=(B1-B3)/A1
          15170 U0=X7-P(32)
          15180 RETURN

++++++    15190 REM*****PRINT 'IMAGINARY ROOTS'

          15200 L0=10000
          15210 X7=10000
          15220 U0=10000
          15230 RETURN
          16000 PRINT 'Processing QL & QP Found vs Target data for 'IM$
          16010 C=0
          16020 O$='  '
          16030 GOSUB 7000
          16040 IF N=0 THEN 16570
          16050 F=0
          16060 P(3)=3
          16070 GOSUB 3000
          16080 GOSUB 20000
          16090 GOSUB 25000
          16100 P(13)=C8
          16110 P(14)=A1
          16120 M1=0
          16130 M2=0
          16140 M3=0
          16150 M4=0
          16160 M5=0
          16170 P(8)=N
          16180 FOR I=1 TO P(8)
          16190  M1=M1+X1(I)
```

```
          16200  M2=M2+Y1(I)
          16210  M3=M3+X1(I)*X1(I)
          16220  M4=M4+Y1(I)*Y1(I)
          16230  M5=M5+X1(I)*Y1(I)
          16240 NEXT I
          16250 C=P(8)*M3-M1*M1
          16260 P(10)=P(8)/C
          16270 P(11)=M1/C
          16280 P(12)=M3/C
          16290 P(2)=(P(8)*M5-M1*M2)/(P(8)*M3-M1*M1)
          16300 P(1)=(M2-P(2)*M1)/P(8)
          16310 P(4)=P(1)
          16320 P(5)=P(2)
          16330 D=0
          16340 FOR I=1 TO P(8)
          16350  D=D+(Y1(I)-P(1)-P(2)*X1(I))^2
          16360 NEXT I
          16370 P(23)=1-D/(M4-M2*M2/P(8))
          16380 P(6)=D/(P(8)-2)
          16400 P(9)=1
          16410 P(29)=1
          16420 P(27)=P(6)
          16430 L$="Found vs Target "&V$
          16440 L$=L$&" - "
          16450 L$=L$&N$
          16460 DIM Y$(30)
          16470 Y$="Found"
          16480 X$="Target"
          16490 D$=SEG(D$,14,2)
          16500 D$=D$&"/"
          16510 W$=SEG(D$,12,2)
          16520 D$=D$&W$
          16530 D$=D$&"/"
          16540 W$=SEG(D$,16,2)
          16550 D$=D$&W$
          16560 GOSUB 61000
++++++    16570 RETURN

          19995 REM
          19996 REM Perform BARTLETT'S TEST for homogeneity
          19997 REM P(6),P(7),Y2(J),X2(NO(J)),K,C8,M1
          19998 REM  find variance for each level
          19999 REM
```

```
---2---   20000 ON SIZE THEN 20370
          20010 C8=-1
          20020 IF K=0 THEN 20370
          20030 G3=1
          20040 S=0
          20050 GOSUB 6000
          20060 S=0
          20070 FOR J=1 TO N
          20080  IF N2(J)=-1 THEN 20110
          20090  S(N2(J))=S(N2(J))+(Y1(J)-M7(N2(J))/NO(N2(J)))^2
++++++    20110 NEXT J
          20120 FOR J=1 TO K
          20130  S(J)=S(J)/(NO(J)-1)
          20140  IF S(J)=0 THEN 20370
```

```
        20150 NEXT J

        20160 REM find pooled variance

        20170 A=0
        20180 S3=1
        20190 FOR J=1 TO K
        20200  A=(N0(J)-1)*S(J)/S3+A
        20210 NEXT J
        20220 S4=A/(N7-K)

        20230 REM find correction factor

        20240 A=0
        20250 FOR J=1 TO K
        20260  A=1/(N0(J)-1)+A
        20270 NEXT J
        20280 C=1+A/(3*(K-1))

        20290 REM find CHI-SQUARE

        20300 A=0
        20320 FOR J=1 TO K
        20330  A=(N0(J)-1)*LOG(S(J)/S3)+A
        20340 NEXT J
        20350 C8=((N7-K)*LOG(S4)-A)/C
        20360 IF C8<>0 THEN 20390
---------------------------------------------------------------------------
---3---  20370 PRINT "BARTLETT'S TEST not defined for data set "M$
        20380 C8=-1
+++1+++  20390 M1=K-1
        20400 OFF SIZE
        20410 RETURN

        24999 REM CHI-SQUARE DISTRIBUTION
---------------------------------------------------------------------------

---2---  25000 IF C8=>0 THEN 25030
        25010 A1=-1
+++2+++  25020 RETURN
+++1+++  25030 A1=0
        25040 IF C8>100 THEN 25020
        25050 A=M1/2
        25060 U=C8/2
        25070 GOSUB 25120
        25080 IF A1=0 THEN 25020
        25090 A2=10^(5+INT(-LGT(A1)))
        25100 A1=INT(A2*A1+0.5)/A2
        25110 RETURN
---------------------------------------------------------------------------
---1---  25120 IF A>100 THEN 25630
        25130 A1=1
        25140 A2=1
        25150 B2=1
        25160 I=1
        25170 IF U<A THEN 25320
        25180 B1=U
```

```
          25190 B2=U+1-A
+++1+++   25200 A1=U*A2+I*A1
          25210 B1=U*B2+I*B1
          25220 I=I+1
          25230 A2=A1+(I-A)*A2
          25240 B2=B1+(I-A)*B2
          25250 IF ABS(A1/B1-A2/B2)>1.0E-7 THEN 25200
          25260 C9=A2/B2
          25270 P2=A*LOG(U)-U
          25280 X=A
          25290 GOSUB 25470
          25300 A1=C9*EXP(P2-A1)
          25310 RETURN
+++1+++   25320 B1=1+A
          25330 A1=B1-U
+++1+++   25340 C9=2*I+A
          25350 A2=C9*A1+I*U*A2
          25360 B2=C9*B1+I*U*B2
          25370 A1=C9*A2+A2-(A+I)*U*A1
          25380 B1=C9*B2+B2-(A+I)*U*B1
          25390 I=I+1
          25400 IF ABS(A2/B2-A1/B1)>1.0E-8 THEN 25340
          25410 C9=B1/A1
          25420 X=A+1
          25430 GOSUB 25470
          25440 A1=A*LOG(U)-U-A1
          25450 A1=1-C9*EXP(A1)
          25460 RETURN

-------------------------------------------------------------------------------
---2---   25470 IF X<10 THEN 25500
          25480 GOSUB 25600
          25490 RETURN
+++1+++   25500 A2=10-INT(X)
          25510 B1=1
          25520 FOR I=0 TO A2-1
          25530  B1=B1*(X+I)
          25540 NEXT I
          25550 X=X+A2
          25560 GOSUB 25600
          25570 X=X-A2
          25580 A1=A1-LOG(B1)
          25590 RETURN

-------------------------------------------------------------------------------
---2---   25600 A1=(X-0.5)*LOG(X)-X+0.5*LOG(2*PI)
          25610 A1=A1+1/(12*X)-1/(360*X*X*X)+1/(1260*X*X*X*X*X)
          25620 RETURN
+++1+++   25630 A1=A-0.5
          25640 B1=U+1/3-A-0.02/A
          25650 X=A1/U
          25660 C9=0
          25670 IF X=0 OR X=1 THEN 25690
          25680 C9=(1-X*X+2*X*LOG(X))/((1-X)*(1-X))
+++1+++   25690 C9=B1*SQR((1+C9)/U)
          25700 IF ABS(C9)>20 THEN 25780
          25710 T=1/(1+0.2316419*ABS(C9))
          25720 A1=T*(0.319381530+T*(-0.356563782+1.781477937*T))
          25730 A1=A1+T*T*(-1.821255978+1.330274429*T)
          25740 A1=SQR(1/(2*PI))*EXP(-C9*C9/2)*A1
```

```
+++1+++  25750 IF C9>0 THEN 25770
         25760 A1=1-A1
+++1+++  25770 RETURN
+++1+++  25780 A1=0
         25790 GO TO 25750

         57995 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
         57996 REM L$(1)PASSED IN CONTAINING NUMBER IN CHARACTER FORM THAT
         57997 REM      IS TO BE PRINTED OUT TO 3 DECIMAL PLACES.
         57998 REM      RESULTANT STRING ISTPASSED BACK IN L$
         57999 REM      FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 7

---------------------------------------------------------------------------------

---3---  58000 K$=SEG(L$,2,1)
         58010 IF K$="-" THEN 58120
         58020 Q0=POS(L$,"E",1)
         58030 IF Q0<>0 THEN 58070
         58040 L$=SEG(L$,1,7)
         58050 Q0=7
         58060 RETURN

+++1+++  58070 REM NUMBER IS IN SCIENTIFIC NOTATION

         58080 K$=SEG(L$,Q0+1,4)
         58090 Q0=VAL(K$)
         58100 IF Q0>0 THEN 58260
         58110 IF Q0>-5 THEN 58150
+++1+++  58120 L$=" 0.0000"
         58130 Q0=7
         58140 RETURN
+++1+++  58150 K$=SEG(L$,1,1)
         58160 K$=K$&"0."
         58170 GO TO -Q0 OF 58200,58190,58180,58175
+++1+++  58175 K$=K$&"0"
+++1+++  58180 K$=K$&"0"
+++1+++  58190 K$=K$&"0"
+++1+++  58200 Q0=7-LEN(K$)
         58210 L$=SEG(L$,2,Q0+1)
         58220 L$=REP("",2,1)
         58230 L$=K$&L$
         58240 Q0=7
         58250 RETURN

+++1+++  58260 REM SECTON TO PRINT OUT #>0

         58270 L$=SEG(L$,1,6)
         58280 L$=L$&"E"
         58290 L$=L$&K$
         58300 Q0=7+LEN(K$)
         58310 RETURN

         59998 REM FIND / OPEN
         59999 REM F$  N9

---------------------------------------------------------------------------------

---5---  60000 FIND @U2:0
         60010 FIND @U2:1
         60020 INPUT @U2:B$
```

```
        60030 J$=SEG(B$,1,3)
        60040 IF J$<>"IDS" THEN 60300
+++1+++ 60050 INPUT @U2,6:A
        60060 IF A=1 THEN 60140
        60070 INPUT @U2:B$
        60080 DIM J$(10)
        60090 J$=SEG(B$,4,10)
        60100 F=LEN(F$)
        60110 DIM J$(F)
        60120 IF F$=J$ THEN 60170
        60130 GO TO 60050
+++1+++ 60140 PRINT "ERROR *** FILE "|F$|" NOT FOUND"
        60150 PRINT @U2,2:
        60160 END
+++1+++ 60170 J$=SEG(B$,1,3)
        60180 N9=VAL(J$)
        60190 FIND @U2:0
        60200 FIND @U2:N9
        60210 INPUT @U2:B$
        60230 J$=SEG(B$,1,F)
        60240 IF J$<>F$ THEN 60260
        60250 RETURN
+++1+++ 60260 PRINT "File does not match internal name"
        60270 PRINT "index name= "|F$|"  internal name="|J$
+++1+++ 60280 PRINT @U2,2:
        60290 END
+++1+++ 60300 PRINT "Tape in external drive is not a IDS Data Tape"
        60310 GO TO 60280

        60998 REM Define and Write Plot File
        60999 REM M$,L$,X$,Y$,D$,F$,F6
```

```
---2---  61000 DIM P$(3)
        61010 P$="000"
        61020 FIND @U2:0
        61030 FIND @U2:1
+++2+++ 61040 INPUT @U2,6:A
        61050 IF A<>2 THEN 61120
        61060 INPUT @U2:B$
        61070 A$=SEG(B$,4,6)
        61080 Q$="P"&M$
        61090 IF A$<>Q$ THEN 61040
        61100 P$=SEG(B$,10,2)
        61110 GO TO 61040
+++1+++ 61120 T3=VAL(P$)
        61130 T3=1+T3
        61140 P$=STR(T3)
        61150 F$="F"&M$
        61160 F$=F$&P$

        61170 REM update index

        61180 A$=SEG(B$,1,3)
        61190 T3=VAL(A$)
        61200 T3=1+T3
        61210 I$="  "
        61220 PRINT @U2: USING 61230:T3,F$,"T",I$
        61230 IMAGE 3D,10A,1A,20A
```

```
        61240 PRINT @02,2;
        61250 FIND @02;0
        61260 FIND @02;T3
        61270 MARK @02;1,2500
        61280 FIND @02;0
        61290 FIND @02;T3
        61300 PRINT @02; USING 61310;F$,D$,U$
        61310 IMAGE 10A,8A,8A
        61320 PRINT @02;L$
        61330 PRINT @02;X$
        61340 PRINT @02;Y$
        61350 PRINT @02;M$
        61360 PRINT @02;D$
        61370 PRINT @02;P
        61380 DIM X2(P(8)),Y2(P(8))
        61390 PRINT @02;X2,Y2
        61400 PRINT @02,2;
        61405 DELETE X2,Y2
        61407 DIM X2(32),Y2(32)

        61410 REM Update Plotfiles

        61420 F$="PLOTFILES"
        61430 GOSUB 60000
****1*** 61440 INPUT @02,6;A
        61450 IF A<>2 THEN 61480
        61460 INPUT @02;T$
        61470 GO TO 61440
****1*** 61480 PRINT @02;T$
        61490 PRINT @02,0;
        61500 RETURN
```

FILE # 3

```
        100 INIT
        110 DATA 33,11,32
        120 READ U1,U2,U3
        130 DIM D$(8),U$(8)
        140 DIM T7(40)
        150 DATA 12.706,4.303,3.182,2.776,2.579,2.451,2.364,2.307,2.262,2.228
        160 DATA 2.201,2.179,2.16,2.145,2.131,2.12,2.11,2.101,2.093,2.086,2.08
        170 DATA 2.074,2.069,2.064,2.06,2.056,2.052,2.049,2.046,2.043,2.04
        180 DATA 2.037,2.035,2.033,2.03,2.028,2.027,2.025,2.023,2.022
        190 READ T7
        200 FIND @U2:0
        210 FIND @U2:2
        220 INPUT @U2,6:A
        230 IF A=1 THEN 2050
        240 INPUT @U2:U$,D$
        250 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
        260 PRINT @U3,17:4

        270 REM#
        280 REM# GET LIST OF FILES TO BE PLOTTED
        290 REM#

        300 F$="PLOTFILES"
        310 GOSUB 3620
        320 I=0
****1*** 330 I=I+1
        340 INPUT @U2,6:A
        350 IF I=1 AND A=1 THEN 2060
        360 INPUT @U2:N1(I)
        370 INPUT @U2,6:T1(2)
        380 IF T1(2)=2 THEN 330
        390 T1(1)=I

        400 REM#
        410 REM# START PLOT LOOP
        420 REM#

        430 FOR I9=1 TO T1(1)
        440  FIND @U2:0
        450  FIND @U2:N1(I9)
        460  INPUT @U2:Z$
        470  INPUT @U2:L$
        480  INPUT @U2:X$
        490  INPUT @U2:Y$
        500  INPUT @U2:A$
        510  INPUT @U2:D$
        520  INPUT @U2:P
        525  IF I9 = 1 THEN 530
        526  GO=P(3)
****1*** 527  IF P(8)=0 THEN 2040
        528  ERASE X,Y
        530  DIM X(P(8)),Y(P(8))
        540  N=P(8)
        550  INPUT @U2:X,Y

        560  REM#
        580  REM# SET DEFAULT PLOT PARAMETER
        590  REM#
```

```
600  REM T(4)-MIN X VALUE OF GRAPH     T(5)-LENGTH OF X AXIS
610  REM T(14)-MIN Y VALUE             T(15)-LENGTH OF Y AXIS

620  VIEWPORT 0,130,0,100
630  WINDOW 0,130,0,100
640  T=0
650  T(1)=P(0)
660  T(2)=2
670  T(3)=4
680  T(6)=10
690  T(5)=70
700  T(8)=1
710  T(9)=1
720  T(14)=25
730  T(15)=70
740  T(18)=1
750  T(19)=1

760  REM LABEL PLOT
770  REM TITLE GRAPH

780  X0=T(5)/2+T(4)-LEN(L$)*7/8
790  Y0=97
800  PAGE
810  MOVE @03:X0,Y0
820  PRINT @03:L$

830  REM DUMP X AXIS TITLE

840  X0=T(5)/2+T(4)-LEN(X$)*7/8
850  Y0=T(14)-10
860  MOVE @03:X0,Y0
870  PRINT @03:X$

880  REM DUMP Y AXIS LABEL

890  X0=3
900  Y0=T(15)/2+T(14)+LEN(Y$)*10/7
910  MOVE @03:X0,Y0
920  PRINT @03:" "
930  FOR Z = 1 TO LEN(Y$)
940   Z$=SEG$(Y$,Z,1)
950   PRINT @03:Z$
960  NEXT Z

970  REM DISPLAY INFO ON RIGHT SIDE OF PLOT

980  X0=T(4)+T(5)+5
990  Y0=T(14)+T(15)-2
1000  MOVE @03:X0,Y0
1010  PRINT @03:"AGENT: "A$
1020  Y0=Y0-4
1030  MOVE @03:X0,Y0
1040  PRINT @03:"DATE: "D$
1050  Y0=Y0-4
1060  MOVE @03:X0,Y0
1070  PRINT @03:"STATISTICS"
1080  MOVE @03:X0,Y0-0.5
1090  PRINT @03:"----------"
1100  Y0=Y0-4
```

```
          1110  T9=2
          1120  IMAGE FA,2D.3D,FA,S
          1130  Y0=Y0-3
          1140  MOVE @U3:X0,Y0
          1150  PRINT @U3:"BARTLETTS:"
          1160  Y0=Y0-3
          1170  MOVE @U3:X0+T9,Y0
          1180  PRINT @U3: USING 1120:"";P(14);""
          1190  IF P(20)=0 THEN 1210
          1200  PRINT @U3: USING 1120:"/";P(20);""
++1++++   1210  Y0=Y0-3
          1220  IMAGE FA,2D.3D
          1230  MOVE @U3:X0,Y0
          1240  PRINT @U3:"R-SQUARED:"
          1250  Y0=Y0-3
          1260  MOVE @U3:X0+T9,Y0
          1270  PRINT @U3: USING 1220:"";P(23)
          1280  IMAGE FA,3E
          1290  Y0=Y0-3
          1300  MOVE @U3:X0,Y0
          1310  PRINT @U3:"MSE:"
          1320  Y0=Y0-3
          1330  MOVE @U3:X0+T9,Y0
          1340  PRINT @U3: USING 1280:"";P(27)
          1350  Y0=Y0-6
          1360  MOVE @U3:X0,Y0
          1370  PRINT @U3:"PARAMETERS"
          1380  MOVE @U3:X0,Y0-0.5
          1390  PRINT @U3:"----------"
          1400  Y0 Y0-4
          1410  IMAGE FA,3D.2D,FA,2D.3D,FA,S
          1420  MOVE @U3:X0,Y0
          1430  GO TO P(3) OF 1480,1450,1510

          1440  REM   case 2    Y=ln(Y)

++1++++   1450  PRINT @U3:"ln(Y)=a+bX"
          1460  GO TO 1520

          1470  REM   case 1    X=ln(X)

++1++++   1480  PRINT @U3:"Y=a+b ln(X)"
          1490  GO TO 1520

          1500  REM   case 3    no transform

++1++++   1510  PRINT @U3:"Y=a+bX"
++2+++    1520  Y0=Y0-3
          1530  MOVE @U3:X0+T9,Y0
          1540  PRINT @U3: USING 1280:"a= ";P(4)
          1550  Y0=Y0-3
          1560  MOVE @U3:X0+T9,Y0
          1570  PRINT @U3: USING 1280:"b= ";P(5)
          1580  IF P(7)=0 THEN 1720
          1590  Y0=Y0-3
          1600  MOVE @U3:X0+T9,Y0
          1610  MOVE @U3:X0,Y0
          1620  PRINT @U3:"S(X) = c(X + a)^d"
          1630  Y0=Y0-3
          1640  MOVE @U3:X0+T9,Y0
```

```
         1650  PRINT @U3: USING 1280:"c= ";P(6)
         1660  Y0=Y0-3
         1670  MOVE @U3:X0+T9,Y0
         1680  PRINT @U3: USING 1280:"d= ";P(7)
         1690  Y0=Y0-3
         1700  MOVE @U3:X0+T9,Y0
         1710  PRINT @U3: USING 1280:"e = ";P(30)
+++1+++  1720  Y0=Y0-3
         1730  MOVE @U3:X0,Y0
         1740  PRINT @U3:"Y' = (-Y + f,^g"
         1750  Y0=Y0-3
         1760  MOVE @U3:X0,Y0
         1770  PRINT @U3:"X' = X + h"
         1780  Y0=Y0-3
         1790  MOVE @U3:X0+T9,Y0
         1800  PRINT @U3: USING 1280:"f = ";P(31)
         1810  Y0=Y0-3
         1820  MOVE @U3:X0+T9,Y0
         1830  PRINT @U3: USING 1280:"g = ";P(29)
         1840  Y0=Y0-3
         1850  MOVE @U3:X0+T9,Y0
         1860  PRINT @U3: USING 1280:"h = ";P(32)
         1870  MOVE @U3:T(4)+T(5),T(14)
         1880  DRAW @U3:T(4)+T(5),T(14)+T(15)
         1890  DRAW @U3:T(4),T(14)+T(15)
         1900  GOSUB 4000
         1910  IF U3=1 THEN 1980
         1920  PRINT "^L"
         1930  PRINT "DO YOU WANT A PLOTTER PLOT OF THIS PLOT? (Y/N)"
         1940  INPUT B$
         1950  IF B$<>"Y" THEN 1980
         1960  U3=10
         1970  GO TO 620
+++2+++  1980  U3=32
         1990  GO TO 2000
+++1+++  2000 NEXT I9

         2010 REM

         2020 FIND 4
         2030 OLD
+++1+++  2040 PRINT "NO DATA SETS FOUND ON THIS TAPE "
+++1+++  2050 END
+++1+++  2060 PRINT "THERE ARE NO PLOT FILES CURRENTLY QUEUED TO BE PRINTED"
         2070 END

         2080 REM*
         2090 REM* PLOT SUBROUTINES
         2100 REM*

-------------------------------------------------------------------------------
---1---   2110 REM*

         2120 U9=4
         2130 GOSUB 3160
         2140 U9=4
         2150 GOSUB 3160
         2160 U8=4
         2170 Y0=Y0-5
         2180 MOVE @U4:X0,Y0
```

```
         2190 PRINT @U3:"SCALE FACTORS:"
         2200 MOVE @U3:X0,Y0-0.5
         2210 PRINT @U3:"------ -------"
         2220 Y0=Y0-4
         2230 MOVE @U3:X0,Y0
         2240 PRINT @U3:"X axis: 10^"|X2
         2250 Y0=Y0-3
         2260 MOVE @U3:X0,Y0
         2270 PRINT @U3:"Y axis: 10^"|Y2
         2280 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
         2290 WINDOW T(6),T(6)+T(7),T(16),T(16)+T(17)
         2300 AXIS @U3:T(8),T(18)
         2310 J=1
         2320 R2=T(18)/(T(17)/T(15))
         2330 R3=T(14)
+++1+++  2340 U$=STR(T(16)+(J-1)*T(18))
         2350 PRINT @U3,21:0 MAX T(4)-(LEN(U$)+1)*1.78,R3-0.89
         2360 PRINT @U3:U$;
         2370 IF J>T(19) THEN 2410
         2380 R3=R3+R2
         2390 J=1+J
         2400 GO TO 2340
+++1+++  2410 R2=T(8)/(T(7)/T(5))
         2420 R3=T(4)
         2430 J=1
+++1+++  2440 U$=STR(T(6)+(J-1)*T(8))
         2450 PRINT @U3,21:0 MAX R3-(LEN(U$)+1)*1.78*0.5,T(14)-4
         2460 PRINT @U3:U$;
         2470 IF J>T(9) THEN 2510
         2480 R3=R3+R2
         2490 J=1+J
         2500 GO TO 2440
+++1+++  2510 FOR J=1 TO T(1)
         2520  IF T(2)<>1 [illegible] 2540
         2530  IF J>1 THEN 2560
+++1+++  2540  MOVE @U3:X(J),Y(J)
         2550  GO TO 2570
+++1+++  2560  DRAW @U3:X(J),Y(J)
+++1+++  2570  GOSUB 2600
         2580 NEXT J
         2590 RETURN

---1---  2600 S2=T(14+3)/T(14+1)*0.75
         2610 S1=T(4+3)/T(4+1)*0.75
         2620 GO TO T(3) OF 2910,2640,2700,2770,2840
         2630 GO TO 2910
+++1+++  2640 RMOVE @U3:0,S2
         2650 RDRAW @U3:S1,-2*S2
         2660 RDRAW @U3:-2*S1,0
         2670 RDRAW @U3:S1,2*S2
         2680 RMOVE @U3:0,-S2
         2690 RETURN
+++1+++  2700 RDRAW @U3:0,S2
         2710 RDRAW @U3:0,-2*S2
         2720 RDRAW @U3:0,S2
         2730 RDRAW @U3:-S1,0
         2740 RDRAW @U3:2*S1,0
         2750 RDRAW @U3:-S1,0
         2760 RETURN
```

```
+++1+++  2770 RMOVE @U3:S1,S2
         2780 RDRAW @U3:0,-2*S2
         2790 RDRAW @U3:-2*S1,0
         2800 RDRAW @U3:0,2*S2
         2810 RDRAW @U3:2*S1,0
         2820 RMOVE @U3:-S1,-S2
         2830 RETURN
+++1+++  2840 RMOVE @U3:0,S2
         2850 RDRAW @U3:S1,-S2
         2860 RDRAW @U3:-S1,-S2
         2870 RDRAW @U3:-S1,S2
         2880 RDRAW @U3:S1,S2
         2890 RMOVE @U3:0,-S2
         2900 RETURN
+++2+++  2910 IF T(2)=1 THEN 2930
         2920 RDRAW @U3:0,0
+++1+++  2930 RETURN

-------------------------------------------------------------------------------

---1---  2940 Y2=0
+++1+++  2950 T(16)=10^39
         2960 T(17)=-T(22)
         2970 FOR J=1 TO T(1)
         2980  T(16)=T(16) MIN Y(J)
         2990  T(17)=T(17) MAX Y(J)
         3000 NEXT J
         3010 T9=T(17)-T(16)
         3020 T(17)=T9*(T9<>0)+(T9=0)
         3030 IF T9<1 THEN 5300
         3040 RETURN

-------------------------------------------------------------------------------

---1---  3050 X2=0
+++1+++  3060 T(6)=10^39
         3070 T(7)=-T(12)
         3080 FOR J=1 TO T(1)
         3090  T(6)=T(6) MIN X(J)
         3100  T(7)=T(7) MAX X(J)
         3110 NEXT J
         3120 T9=T(7)-T(6)
         3130 T(7)=T9*(T9<>0)+(T9=0)
         3140 IF T9<1 THEN 5350
         3150 RETURN

-------------------------------------------------------------------------------

---2---  3160 DIM S0(5)
         3170 S0(3)=INT(T(U9+1)/15)
         3180 S0(3)=T(U9+3)/S0(3)
         3190 S0(4)=INT(ABS(LGT(S0(3))))*SGN(LGT(S0(3)))
         3200 S0(4)=INT(10^S0(4)+1.0E-4)
         3210 IF S0(4)>0 THEN 3250
         3220 S0(3)=1
         3230 S0(4)=1
         3240 GO TO 3330
+++1+++  3250 S0(5)=S0(3)/S0(4)
         3260 S0(3)=S0(4)*10
         3270 IF S0(5)>=10 THEN 3290
         3280 S0(3)=S0(4)*5
+++1+++  3290 IF S0(5)>=5 THEN 3310
         3300 S0(3)=S0(4)*2
```

```
+++1+++  3310 IF S0(5)=>2 THEN 3330
         3320 S0(3)=S0(4)
+++2+++  3330 S0(5)=T(U9+2)/S0(3)
         3340 IF S0(5)=>0 THEN 3360
         3350 S0(5)=S0(5)-0.9999
+++1+++  3360 S0(1)=S0(3)*(INT(ABS(S0(5)))*SGN(S0(5)))
         3370 S0(5)=(T(U9+3)+T(U9+2))/S0(3)
         3380 IF S0(5)<0 THEN 3400
         3390 S0(5)=S0(5)+0.9999
+++1+++  3400 S0(2)=S0(3)*(INT(ABS(S0(5)))*SGN(S0(5)))
         3410 S0(5)=S0(2)-S0(1)
         3420 S0(4)=INT(INT(ABS(S0(5)))*SGN(S0(5))/S0(3))
         3430 IF S0(5)=>1 THEN 3460
         3440 S0(3)=S0(5)
         3450 S0(4)=1
+++1+++  3460 IF S0(3)=>1 THEN 3490
         3470 S0(3)=S0(5)
         3480 S0(4)=1
+++1+++  3490 T(U9+2)=S0(1)
         3500 T(U9+3)=S0(2)-S0(1)
         3510 T(U9+4)=S0(3)
         3520 T(U9+5)=S0(4)
         3530 T(U9+6)=1.75*T(U9+3)/T(U9+1)
         3540 RETURN
         3550 X4=X0+P(32)
         3560 IF P(3)<>2 THEN 3580
         3570 X4=LOG(X4)
+++1+++  3580 Y0=(P(1)+P(2)*X4)^(1/P(29))-P(31)
         3590 IF P(3)<>1 THEN 3610
         3600 Y0=LOG(Y0)
+++1+++  3610 RETURN
```

```
---1---   3620 REM     FIND/OPEN
         3630 REM$ (F$,N9)

         3640 FIND @U2:0
         3650 FIND @U2:1
         3660 INPUT @U2:B$
         3670 J$=SEG(B$,1,3)
         3680 IF J$<>"IDS" THEN 3970
+++1+++  3690 INPUT @U2,4:A
         3700 IF A=1 THEN 3780
         3710 INPUT @U2:B$
         3720 DIM J$(10)
         3730 J$=SEG(B$,4,10)
         3740 F=LEN(F$)
         3750 DIM J$(F)
         3760 IF J$=F$ THEN 3820
         3770 GO TO 3690

+++1+++  3780 REM$

         3790 PRINT "ERROR **** FILE";F$;"NOT FOUND"
         3800 CLOSE
         3810 END
+++1+++  3820 J$=SEG(B$,1,3)
         3830 N9=VAL(J$)
         3840 FIND @U2:0
```

```
          3850 FIND @U2:N9
          3860 INPUT @U2:B$
          3870 DIM J$(10)
          3880 J$=SEG(B$,1,10)
          3890 F=LEN(F$)
          3900 DIM J$(F)
          3910 IF J$<>F$ THEN 3930
          3920 RETURN
+++1+++   3930 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
          3940 PRINT "INDEX NAME ="F$;"INTERNAL NAME ="J$
          3950 PRINT @U2,2;
          3960 END
+++1+++   3970 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDB DATA TAPE"
          3980 PRINT @U2,2;
          3990 END
-------------------------------------------------------------------------------

---1---   4000 REM$  PLOT DATA,CURVE AND CONFIDENCE LIMITS

          4010 GOSUB 2940
          4020 GOSUB 3050

          4050 REM* ADJUST X RANGE

          4060 T(6)=T(6)-0.1*T(7)
          4070 T(6)=T(6) MAX 0.01*T(7)
          4080 T(7)=T(7)*1.2

          4090 REM*  ADJUST Y-RANGE

          4100 T(16)=T(16)-0.05*T(17)
          4110 T(16)=T(16) MAX 0.01*T(17)
          4120 T(17)=T(17)*1.1

          4130 REM*  PLOT OBSERVED DATA

          4140 GOSUB 2110

          4150 REM*
          4160 REM*  DRAW @U3:UPPER AND LOWER CONFIDENCE LIMITS
          4170 REM*
          4180 REM   T(16)=T(16)+0.01*T(17)

          4190 Y0=T(16)
          4200 GOSUB 4820
          4220 MOVE @U3:X0*10^-X2,T(16)*10^-Y2
          4230 FOR Y5=T(16) TO T(16)+T(17) STEP T(17)/100
          4240   Y0=Y5
          4250   GOSUB 4820
          4270   DRAW @U3:X0*10^-X2,Y5*10^-Y2
          4280 NEXT Y5
          4290 Y0=T(16)
          4300 GOSUB 4820
          4310 Y0=T(16)
          4320 D7=T(16)
          4330 GOSUB 4950
          4350 MOVE @U3:L0*10^-X2,T(16)*10^-Y2
          4360 D7=10^Y2
          4365 D8=10000
```

```
         4370 FOR Y5=(T(16)-T(17))*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
         4380  IF P(3)=2 AND Y5<=-P(31) THEN 4470
         4390  Y0=Y5
         4400  GOSUB 4820
         4410  Y0=Y5
         4420  GOSUB 4950
         4440  DRAW @U3:L0*10^-X2,Y5*10^-Y2
         4450  IF L0>0 THEN 4470
         4460  D8=U0
+++2+++  4470 NEXT Y5
         4480 Y0=T(16)
         4490 GOSUB 4820
         4500 Y0=T(16)
         4510 GOSUB 4950
         4530 MOVE @U3:U0*10^-X2,T(16)*10^-Y2
         4540 FOR Y5=T(16)*D7 TO (T(16)+T(17))*D7 STEP T(17)/100*D7
         4550  IF P(3)=2 AND Y5<=-P(31) THEN 4620
         4560  Y0=Y5
         4570  GOSUB 4820
         4580  Y0=Y5
         4590  GOSUB 4950
         4610  DRAW @U3:U0*10^-X2,Y5*10^-Y2
+++1+++  4620 NEXT Y5
         4630 T4=10000
         4640 FOR T5=1 TO N
         4650  IF X(T5)<=0 THEN 4670
         4660  T4=T4 MIN X(T5)*10^X2
+++1+++  4670 NEXT T5
         4680 IF D8>T4 THEN 4700
         4690 D8=T4
+++1+++  4700 VIEWPORT 0,130,0,100
         4710 WINDOW 0,130,0,100

         4720 REM!!   X$="DETECTION LIMIT IS "
         4723 REM!!    IF D8<>10000 THEN 4730

         4725 X$=" "

         4726 REM!!  X$="WARNING - Detection Limit ERRORGOOR"

         4728 GO TO 4770
         4730 Y$=STR(D8)
         4740 Y0=POS(Y$,".",1)
         4750 Y$=SEG(Y$,1,Y0+2)
         4760 X$=X$&Y$
++>1+++  4770 X0=T(5)/2+T(4)-LEN(X$)*7/8
         4780 Y0=T(14)-14
         4790 MOVE @U3:X0,Y0
         4800 PRINT @U3:X$
         4802 Y0=Y0-3
         4803 Y$=STR(D0)
         4804 X$="Calibration Curve # "&Y$
         4805 X0=T(5)/2+T(4)-LEN(X$)*7/8
         4808 MOVE @U3:X0,Y0
         4809 PRINT @U3:X$
         4810 RETURN
```

```
---6---   4820 REM$
```

```
          4830 REM*  SOLVE LINEAR REGRESSION IN REVERSE FOR X0
          4340 REM*  (Y0;X0)
          4850 REM* TRANSFORM Y0
          4860 REM* Y0=(Y0+P(31))^P(29)

          4870 IF P(3)<>2 THEN 4890
          4880 Y0=LOG(-Y0+P(31))
+++1+++   4890 X0=(Y0-P(1))/P(2)
          4900 IF P(3)<>1 THEN 4920
          4910 X0=EXP(X0)
+++1+++   4920 X0=X0-P(32)
          4930 RETURN

          4940 REM*
-------------------------------------------------------------------------------
---4---    4950 REM*
          4960 REM*      SOLVE LINEAR REGRESSION IN REVERSE FOR
          4970 REM*          UPPER AND LOWER CONFIDENCE LIMITS
          4980 REM*          (Y0,X0;L0,U0)
          4990 REM*     T-VALUES   L=.025    U=.975
          4991 REM  L0 is the lower curve if slope is positive
          4992 REM  U0 is the upper curve if slope is positive
          4993 REM  L0 is the upper curve if slope is negative
          4994 REM  U0 is the lower curve if slope is negative

          5000 T3=0
          5010 U0=0

          5020 REM* Power Transform
          5030 REM* Y0=(Y0+P(31))^P(29)
          5040 REM Functional Transform

          5050 IF P(3)<>2 THEN 5070
          5060 Y0=LOG(-Y0+P(31))
+++1+++   5070 T3=T7(N-2)^2*P(6)
          5080 A1=P(2)^2-P(10)*T3
          5090 B1=P(2)*(Y0-P(1))-P(11)*T3
          5100 A2=(X0+P(30))^P(7)+P(12)
          5110 B2=Y0-P(1)
          5120 A3=T3*P(11)^2-T3*P(10)*A2+P(2)^2*A2+P(10)*B2^2-2*P(2)*P(11)*B2
          5122 IF A3=>0 THEN 5130
          5123 MOVE @U3;10,10
          5124 PRINT @U3;"Imaginary Roots.  Execution halted"
          5126 STOP
+++1+++   5130 B3=T7(N-2)*SQR(A3*P(6))
          5140 X0=(B1+B3)/A1

          5150 REM Inverse Functional Transform

          5160 IF P(3)<>1 THEN 5180
          5170 X0=EXP(X0)
+++1+++   5180 U0=X0-P(32)
          5190 X0=(B1-B3)/A1

          5200 REM*    Inverse Functional transform

          5210 IF P(3)<>1 THEN 5230
          5220 X0=EXP(X0)
+++1+++   5230 L0=X0-P(32)
```

```
          5280 RETURN

          5290 REM scale X & Y for plot

+++1+++   5300 FOR J=1 TO T(1)
          5310  Y(J)=10*Y(J)
          5320 NEXT J
          5330 Y2=Y2-1
          5340 GO TO 2950
+++1+++   5350 FOR J=1 TO T(1)
          5360  X(J)=10*X(J)
          5370 NEXT J
          5380 X2=X2-1
          5390 GO TO 3060
```

FILE # 4

```
95 REM$ QC ANALYSIS

100 INIT
101 PRINT @32,26:0
102 SET DEGREES
104 DATA 33,11,32
105 READ U1,U2,U3
109 DIM Y1(31),Y2(31),Y3(31),X(31),Y(31),X9(31)
110 DIM U$(8),A1(31),B3(31),B4(31),D$(8),N$(2),M8(31),M9(31)
111 DIM L8(31),L9(31),U8(31),U9(31),S6(31),S7(31),Y8(31),Y9(31)
112 DATA 3.76,2.326,1.88,1.596,1.41,1.277,1.175,1.094,1.028,0.973,0.925
113 DATA 0.884,0.848,0.816,0.788,0.762,0.738,0.717,0.697,0.679,0.662
114 DATA 0.647,0.632,0.619,0.588,0.577,0.567,0.557,0.548,0.539,0.5303
115 READ A1
116 DATA 0,0,0,0,0,0.03,0.118,0.185,0.239,0.284,0.321,0.354,0.382,0.406
117 DATA 0.428,0.448,0.466,0.482,0.497,0.51,0.523,0.534,0.545,0.555
118 DATA 0.565,0.584,0.592,0.599,0.606,0.613,0.619
119 READ B3
120 DATA 0,3.267,2.568,2.266,2.089,1.97,1.882,1.815,1.761,1.716,1.679
121 DATA 1.646,1.618,1.594,1.572,1.552,1.534,1.518,1.503,1.49,1.477
122 DATA 1.466,1.455,1.445,1.435,1.416,1.408,1.401,1.394,1.387,1.381
123 READ B4
124 FIND @U2:0
130 FIND @U2:2
140 INPUT @U2,6:A
150 IF A=1 THEN 10100
160 INPUT @U2:U$,D$
170 DIM N1(20),T1(20),T(24),T$(40),X$(30),Y$(30),P(34),L$(60),A$(3)
180 DIM W8(7),W9(7),C$(130)
190 PRINT @U3,17:4
191 C$="JANUARY   "
192 C$=C$&"FEBRUARY  "
193 C$=C$&"MARCH     "
194 C$=C$&"APRIL     "
195 C$=C$&"MAY       "
196 C$=C$&"JUNE      "
197 C$=C$&"JULY      "
198 C$=C$&"AUGUST    "
199 C$=C$&"SEPTEMBER"
200 C$=C$&"OCTOBER   "
201 C$=C$&"NOVEMBER  "
202 C$=C$&"DECEMBER  "

210 REM*
211 REM* GET LIST OF FILES TO BE PLOTTED
212 REM*

220 K9=0
230 K9=K9+1
240 K2=0
250 F$="PLOTSOC"
260 GOSUB 4045
270 INPUT @U2,6:A
280 IF A<>2 AND K2=0 THEN 10000
282 IF A<>2 THEN 10200
284 INPUT @U2:M$
286 INPUT @U2:D$
```

```
          288 INPUT @U2:D$
          290 INPUT @U2:C,P(25),P(26),P(28)
          300 K2=K2+1
          310 IF K9=K2 THEN 321
          320 GO TO 270
+++1+++   321 F5=0
          322 IF P(28)=4 THEN 330
          323 PRINT "IS THIS THE FIRST STAT RUN FOR TODAY? (Y/N)"
          324 INPUT A$
          325 IF A$="Y" THEN 330
          326 F5=1

+++2+++   330 REM* SET X LABEL

          350 N$=SEG(D$,4,2)

          355 REM* SET X LABEL

          360 A$=SEG(D$,1,2)
          361 A=VAL(A$)
          362 A=(A-1)*9+1
          363 X$=SEG(C$,A,9)

          370 REM$ GET HISTORY Q

          372 RESTORE 381
          375 F$="HQ"&M$
          380 GOSUB 4045
          381 DATA 0,0,0,0
          382 READ F1,F2,F3,F4
          390 INPUT @U2:K1,D7,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
          395 INPUT @U2:W8,W9,F1,F2,F3,F4
          396 FOR I=1 TO 31
          397  X9(I)=1
          398 NEXT I
          400 D8=VAL(N$)
          415 K1=P(28)+F5*K1
          416 F1=0
          417 F3=0

          420 REM* M9(D8)=(M9(D7)*(K-1)+P(25))/K
          430 REM* M8(D8)=(L3(D7)*(K-1)+P(26))/K

          440 Y9(D8)=P(25)+F5*Y9(D8)
          450 Y8(D8)=P(26)+F5*Y8(D8)
          460 IF K1=4 THEN 551
          461 PRINT "NO QC PLOT WILL BE PRODUCED FOR ";M$;" AT LEVEL ";C;","
          462 PRINT "SINCE FOUR QC DATA POINTS ARE NOT YET AVAILABLE "
          463 GO TO 1080
          465 GO TO 551
          470 U9=M9(D8)+A1(K1)*M8(D8)
          480 L9=M9(D8)-A1(K1)*M8(D8)
          495 U8=B1(K1)*M8(D8)
          500 L8=B2(K1)*M8(D8)
          510 GO TO 551
          520 U9(D8)=M9(D8)+3/SQR(K1)*M8(D8)
          530 L9(D8)=M9(D8)-3/SQR(K1)*M8(D8)
          540 U8(D8)=(1+3/SQR(2*K1))*M8(D8)
          550 L8(D8)=(1-3/SQR(2*K1))*M8(D8)
```

```
+++3+++  551 REM* SET WARNING FLAGS

         552 IF NOT(Y9(D8)>U9(D8) OR Y9(D8)<L9(D8)) THEN 554
         553 F1=1
+++1+++  554 IF NOT(Y8(D8)>U8(D8) OR Y8(D8)<L8(D8)) THEN 556
         555 F3=1

+++1+++  556 REM$ ZERO OUT DATA FROM D7 TO D8

         557 IF D7=D8 THEN 573
         558 I=D7
         560 IF D8>D7 THEN 562
         561 I=0
+++2+++  562 I=I+1
         563 IF I=D8 THEN 573
         564 Y9(I)=-1
         568 Y8(I)=-1
         572 GO TO 562

+++2+++  573 REM$
         620 REM* UPDATE WARNING

         621 F2=0
         622 F4=0
         625 FOR I=6 TO 1 STEP -1
         630  W8(I+1)=W8(I)
         640  W9(I+1)=W9(I)
         650 NEXT I
         660 IF Y9(D8)>M9(D8) THEN 690
         670 W9(1)=-1
         680 GO TO 700
+++1+++  690 W9(1)=1
+++1+++  700 IF Y8(D8)>M8(D8) THEN 730
         710 W8(1)=-1
         720 GO TO 740
+++1+++  730 W8(1)=1
+++1+++  740 FOR I=1 TO 7
         750  F2=F2+W9(I)
         760  F4=F4+W8(I)
         770 NEXT I
         771 F2=ABS(F2)
         772 F4=ABS(F4)

         780 REM* PLOT QC CHARTS

         790 E$="ACCURACY CONTROL CHART FOR "$M$
         810 Y$=" "
         820 W$=" "
         900 Y1=L9
         910 Y2=M9
         920 Y3=U9
         921 X=X9
         922 Y=Y9
         923 B=D8
         930 IF NOT(F1=1 OR F2=7) THEN 950
         940 W$="WARNING - PROCESS IS OUT OF CONTROL"

+++1+++  950 REM$ COSUB PLOT
```

```
         956 PRINT "&J"
         960 IF U3=10 THEN 967
         961 PRINT "DO YOU WANT A 4662 PLOTT (Y/N)"
         962 INPUT B$
         963 A$=SEG(B$,1,1)
         964 IF A$<>"Y" THEN 967
         965 U3=10
         966 GOSUB 1775
+++2+++  967 U3=32
         970 E$="PRECISION CONTROL CHART FOR "$M$
         980 W$=" "
         990 Y=Y8
        1000 Y1=L9
        1010 Y2=M8
        1020 Y3=U8
        1025 D=D8
        1030 IF NOT(F3=1) THEN 1050
        1040 W$="WARNING - PROCESS IS OUT OF CONTROL"

+++1+++  1050 REM$ GOSUB PLOT

        1055 GOSUB 1775
        1056 PRINT "&J"
        1060 IF U3=10 THEN 1067
        1061 PRINT "DO YOU WANT A 4662 PLOTT (Y/N)"
        1062 INPUT B$
        1063 A$=SEG(B$,1,1)
        1064 IF A$<>"Y" THEN 1067
        1065 U3=10
        1066 GOSUB 1775
+++2+++  1067 U3=32

        1070 REM$ UPDATE HISTORY Q FILE

+++1+++  1080 F$="HQ"$M$
        1090 GOSUB 4845
        1200 PRINT @U2%1,D8,X9,Y9,M9,U9,L9,Y8,M8,U8,L8
        1210 PRINT @U2%U8,U9,F1,F2,F3,F4
        1215 PRINT @U2,2;
        1220 GO TO 230

        1705 REM$
        1760 REM$ QC PLOT ROUTINES
        1765 REM$

-------------------------------------------------------------------------------

---4---  1775 DIM W$(60),J$(60)
        1785 DIM X9(31),Y9(31),Y3(31),T(24)
        2000 PAGE

        2035 REM$ HEIGHT OF SPACE

        2040 H0=2.82

        2055 REM HEIGHT OF CHARACTER

        2060 H1=1.63

        2075 REM WIDTH OF SPACE
```

```
2085 H2=1.79

2095 REM WIDTH OF CHARACTER

2105 H3=1.55

2115 REM HEIGHT OF TIC MARK

2125 H4=1

2135 REM WIDTH OF TIC MARK

2145 H5=2
2155 VIEWPORT 0,130,0,100
2165 WINDOW 0,130,0,100

2175 REM X MIN

2185 T(4)=15

2195 REM X DOMAIN

2205 T(5)=105

2215 REM Y MIN

2225 T(14)=10

2235 REM Y RANGE

2245 T(15)=75

2255 REM BOX GRAPH

2265 MOVE @U3:T(4),T(14)
2275 DRAW @U3:T(4),T(14)+T(15)
2285 DRAW @U3:T(4)+T(5),T(14)+T(15)
2295 DRAW @U3:T(4)+T(5),T(14)
2305 DRAW @U3:T(4),T(14)

2315 REM MAKE TIC MARKS ON X AXIS

2325 FOR I=0 TO 34 STEP 2
2335  MOVE @U3:T(4)+I*3,T(14)+H4/2
2345  RDRAW @U3:0,-H4

2355  REM LABEL THE MARK

2365  RMOVE @U3:-H2,-H0
2370  IF I=0 OR I=34 THEN 2405
2375  IF I<10 THEN 2395
2385  RMOVE @U3:-H2,0
2395  PRINT @U3:I;
2405 NEXT I

2415 REM PRINT OUT WARNING

2420 A=LEN(W$)
```

```
2423 IF A<2 THEN 2535
2425 X0=T(4)+(T(5)-LEN(W$)*H2)/2
2435 Y0=96
2445 MOVE @U3:X0,Y0
2455 PRINT @U3:W$;

2465 REM DRAW @U3:BOX AROUND WARNING

2475 MOVE @U3:X0-H2/2,Y0-H0/3
2485 RDRAW @U3:0,5*H0/3
2495 RDRAW @U3:(LEN(W$)+1)*H2,0
2505 RDRAW @U3:0,-5*H0/3
2515 RDRAW @U3:-(LEN(W$)+1)*H2,0

2525 REM WRITE TITLE

+++1+++  2535 Y0=Y0-5
2545 X0=T(4)+(T(5)-LEN(E$)*H2)/2
2555 MOVE @U3:X0,Y0
2565 PRINT @U3:E$;
2575 Y0=Y0-3
2585 X0=T(4)+(T(5)-LEN(J$)*H2)/2
2595 MOVE @U3:X0,Y0
2605 PRINT @U3:J$;

2615 REM PRINT X AXIS LABEL

2625 Y0=T(14)-3*H0
2635 X0=T(4)+(T(5)-LEN(X$)*H2)/2
2645 MOVE @U3:X0,Y0
2655 PRINT @U3:X$;

2665 REM Y AXIS LABEL

2675 X0=3
2685 Y0=T(14)+(T(15)+LEN(Y$)*H0)/2
2695 MOVE @U3:X0,Y0
2705 FOR I=1 TO LEN(Y$) STEP 1
2715  Z$=SEG(Y$,I,1)
2725  PRINT @U3:Z$;"JU";
2735 NEXT I

2745 REM END OF PRELIMINARIES  NOW DO PLOTS

2746 Y4=Y1(1)
2747 Y5=Y3(1)
2748 I=(Y5-Y4)/2
2749 U0=Y4-I
2750 U1=Y5+I
2751 GO TO 2780

2755 REM SET UP STUFF

2756 Y4=100000
2757 Y5=-100000
2758 FOR I=1 TO 31
2759  IF Y(I)=0 THEN 2761
2760  Y4=Y4 MIN Y(I)
+++1+++  2761  IF Y1(I)=0 THEN 2763
2762  Y4=Y4 MIN Y1(I)
```

```
+++1+++  2743  Y5=Y5 MAX Y(I)
         2764  Y5=Y5 MAX Y3(I)
         2765 NEXT I

         2770 REM IN HERE GOES CODE TO PICK NEAT ENDPOINTS FOR Y-AXIS

+++1+++  2780 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
         2781 WINDOW 0,35,00,01
         2815 FOR I=1 TO D STEP 1
         2820  IF Y(I)<0 THEN 2845,
         2821  IF Y(I)>01 THEN 9400
         2822  IF Y(I)<.00 THEN 9500
         2825  MOVE @U3:X(I),Y(I)
         2835  GOSUB 3185
+++3+++  2845 NEXT I
         2846 VIEWPORT T(4),T(4)+T(5),0,T(15)
         2847 WINDOW 0,35,00,01
         2848 MOVE @U3:0,00
         2849 G$=SEG(C$,1,3)
         2850 PRINT @U3:G$;" = ";Y(D)
         2851 VIEWPORT T(4),T(4)+T(5),T(14),T(14)+T(15)
         2852 WINDOW 0,35,00,01
         2855 GOSUB 9000
         2856 MOVE @U3:0,Y1(1)
         2857 DRAW @U3:35,Y1(1)
         2858 MOVE @U3:35,Y3(1)
         2859 DRAW @U3:0,Y3(1)
         2860 MOVE @U3:0,Y2(1)
         2861 DRAW @U3:35,Y2(1)
         2862 RETURN
         2865 MOVE @U3:0,Y1(1)
         2875 FOR I=1 TO D-1 STEP 1
         2880  IF Y1(I)=.0 THEN 2900
         2885  DRAW @U3:X(I),Y1(I)
         2895  RDRAW @U3:0,Y1(I+1)-Y1(I)
         2898  GO TO 2905
+++1+++  2900  MOVE @U3:X(I+1),Y(I+1)
+++1+++  2905 NEXT I
         2915 DRAW @U3:X(D),Y1(D)
         2925 FOR I=1 TO 4
         2935  RMOVE @U3:0.5,0
         2945  RDRAW @U3:0.5,0
         2955 NEXT I

         2965 REM DO Y3

         2975 MOVE @U3:0,Y3(1)
         2985 FOR I=1 TO D-1 STEP 1
         2990  IF Y(I)<0 THEN 3015
         2995  DRAW @U3:X(I),Y3(I)
         3005  RDRAW @U3:0,Y3(I+1)-Y3(I)
         3010  GO TO 3020
+++1+++  3015  MOVE @U3:X(I+1),Y3(I+1)
+++1+++  3020 NEXT I
         3025 DRAW @U3:X(D),Y3(D)
         3035 FOR I=1 TO 4 STEP 1
         3045  RMOVE @U3:0.5,0
         3055  RDRAW @U3:0.5,0
         3065 NEXT I
```

```
         3075 REM Y2

         3085 MOVE @U3:0,Y2(1)
         3095 FOR I=1 TO B-1 STEP 1
         3100  IF Y2(I)<0 THEN 3125
         3105  RDRAW @U3:0.5,0
         3110  RMOVE @U3:0.5,Y2(I+1)-Y2(1)
         3120  GO TO 3130
+++1+++  3125  MOVE @U3:X(I+1),Y2(I+1)
+++1+++  3130 NEXT I
         3135 FOR I=1 TO 5
         3145  RDRAW @U3:0.5,0
         3150  RMOVE @U3:0.5,0
         3165 NEXT I
         3175 RETURN
```

```
---1---   3185 REM$ THIS CENTERS DIAMONDS

         3200 RMOVE @U3:0,-0.01*(01-00)
         3205 RDRAW @U3:0.35,0.01*(01-00)
         3210 RDRAW @U3:-0.35,0.01*(01-00)
         3215 RDRAW @U3:-0.35,-0.01*(01-00)
         3220 RDRAW @U3:0.35,-0.01*(01-00)
         3225 RETURN
         3235 DRAW @U3:X(B),Y(B)
```

```
---3---   4845 REM$    FIND/OPEN
         4855 REM$ (F$,N9)

         4860 FIND @U2:0
         4865 FIND @U2:1
         4875 INPUT @U2:B$
         4885 J$=SEG(B$,1,3)
         4895 IF J$<>"IDS" THEN 5175
+++1+++  4905 INPUT @U2,6:A
         4915 IF A=1 THEN 4995
         4925 INPUT @U2:B$
         4935 DIM J$(10)
         4945 J$=SEG(B$,4,10)
         4955 F=LEN(F$)
         4965 DIM J$(F)
         4975 IF J$=F$ THEN 5035
         4985 GO TO 4905

+++1+++  4995 REM$

         5005 PRINT "ERROR **** FILE";F$;"NOT FOUND"
         5015 CLOSE
         5025 FIND 1
         5026 OLD
+++1+++  5035 J$=SEG(B$,1,3)
         5045 N9=VAL(J$)
         5060 FIND @U2:0
         5065 FIND @U2:N9
         5065 INPUT @U2:B$
         5075 DIM J$(10)
```

```
         5085 J$=SEG(D$,1,10)
         5095 F=LEN(F$)
         5105 DIM J$(F)
         5115 IF J$<>F$ THEN 5135
         5125 RETURN
+++1+++  5135 PRINT "FILE DOES NOT MATCH INTERNAL NAME"
         5145 PRINT "INDEX NAME ="|F$|"INTERNAL NAME ="|J$
         5155 PRINT @U2,21
         5165 FIND 1
         5166 OLD
+++1+++  5175 PRINT "DATA TAPE IN EXTERNAL TAPE UNIT IS NOT A IDS DATA TAPE"
         5185 PRINT @U2,21
         5195 FIND 1
         5196 OLD

         5405 REM*  PLOT OBSERVED DATA

         5415 GOSUB 3395

         6715 REM*DRAW HU

         6720 SET DEGREES
         6730 VIEWPORT 0,130,0,100
         6740 WINDOW 0,130,0,100

         6750 REM*H0 - PRINTED LINE HEIGHT
         6760 REM*H1 - PRINTED CHARACTER HEIGHT
         6770 REM*H2 - WIDTH OF SPACE
         6780 REM*H3 - WIDTH OF A CHARACTER

         6790 S0=15
         6800 H0=2.82
         6810 H1=1.68
         6820 H2=1.79
         6830 H3=1.55
         6840 MOVE @U3:X0+H0/20,Y0+H2/20
         6850 RDRAW @U3:H3/S0,H1*5/S0
         6860 FOR I=1 TO S0/2
         6870   RDRAW @U3:0,H1/S0
         6880 NEXT I
         6890 FOR I=1 TO S0/2
         6900   RDRAW @U3:0,-H1/S0
         6910 NEXT I
         6920 FOR I=0 TO 180 STEP S0*3/2
         6930   ROTATE I+270
         6940   RDRAW @U3:H1/S0,0
         6950 NEXT I
         6960 FOR I=1 TO S0/2
         6970   RDRAW @U3:H1/S0,0
         6980 NEXT I
         6990 FOR I=1 TO S0/2
         7000   RDRAW @U3:-H1/S0,0
         7010 NEXT I
         7020 FOR I=270 TO 360 STEP S0/2*3
         7030   ROTATE I
         7040   RDRAW @U3:H1/S0,0
         7050 NEXT I
         7060 MOVE @U3:X0+H2*1.1,Y0+0.1*H0
         7070 RETURN
```

```
        7999 REM*DRAW RHO

        8000 SET DEGREES
        8010 VIEWPORT 0,130,0,100
        8020 WINDOW 0,130,0,100

        8030 REM*H0 - PRINTED LINE HEIGHT
        8040 REM*H1 - PRINTED CHARACTER HEIGHT
        8050 REM*H2 - WIDTH OF SPACE
        8060 REM*H3 - WIDTH OF A CHARACTER

        8070 MOVE @U3:X0-H1/2,Y0
        8080 FOR I=-95 TO 265 STEP 15
        8090   ROTATE I
        8100   RDRAW @U3:H3/S0*1.3,0
        8110 NEXT I
        8120 ROTATE -5
        8130 RDRAW @U3:0,-10*H3/S0
        8140 RMOVE @U3:H3,0
        8150 RETURN

        8999 REM ROUTINE TO LABEL Y AXIS
-------------------------------------------------------------------------------
---1---  9000 REM

        9070 L$=STR(Y1(1))
        9080 GOSUB 61600
        9090 MOVE @U3:0,Y1(1)
        9100 FOR I=1 TO 00+1
        9110   PRINT @U3:"H";
        9120 NEXT I
        9130 PRINT @U3:L$;
        9140 L$=STR(Y2(1))
        9150 GOSUB 61600
        9160 MOVE @U3:0,Y2(1)
        9170 FOR I=1 TO 00+1
        9180   PRINT @U3:"H";
        9190 NEXT I
        9200 PRINT @U3:L$;
        9210 L$=STR(Y3(1))
        9220 GOSUB 61600
        9230 MOVE @U3:0,Y3(1)
        9240 FOR I=1 TO 00+1
        9250   PRINT @U3:"H";
        9260 NEXT I
        9270 PRINT @U3:L$;
        9280 RETURN

+++1+++  9400 REM ROUTINE TO DRAW ARROW POINTING UP

        9410 MOVE @U3:X(I),01
        9420 PRINT @U3:"J";
        9430 GO TO 2845

+++1+++  9500 REM ROUTINE TO DRAW UPSIDE DOWN ARROW

        9510 MOVE @U3:X(I),00
        9520 L$=CHR(127)
        9530 PRINT @U3:L$;
```

```
          9550 GO TO 2845
+++1+++   10000 PRINT "NO QC PLOTS ARE AVAILABLE FOR PLOTTING"
          10050 FIND 1
          10051 OLD
+++1+++   10100 PRINT "ERROR WITH HISTORY TAPE FILE NUMBER 2"
+++1+++   10200 FIND 1
          10201 OLD

-------------------------------------------------------------------------------

---3---   61600 REM ROUTINE TO PRINT NUMBERS TO 3 DECIMAL PLACES
          61610 REMPL$(LPASSED IN CONTAINING NUMBER IN CHARACTER FORM THAT
          61620 REM      IS TO BE PRINTED OUT TO 3 DECIMAL PLACES
          61630 REM      RESULTANT STRING ISTPASSED BACK IN L$
          61640 REM      FORMAT OF RESULT   SD.DDD  WITH LENGTH OF 6

          61650 Q0=POS(L$,"E",1)
          61660 IF Q0<>0 THEN 61700
          61670 L$=SEG(L$,1,6)
          61680 Q0=6
          61690 RETURN

+++1+++   61700 REM NUMBER IS IN SCIENTIFIC NOTATION

          61710 K$=SEG(L$,Q0+1,4)
          61720 Q0=VAL(K$)
          61730 IF Q0>0 THEN 61880
          61740 IF Q0>-4 THEN 61780
          61750 L$=" 0.000"
          61760 Q0=6
          61770 RETURN
+++1+++   61780 K$=SEG(L$,1,1)
          61785 K$=K$&"0."
          61790 GO TO -Q0 OF 61820,61810,61800
+++1+++   61800 K$=K$&"0"
+++1+++   61810 K$=K$&"0"
+++1+++   61820 Q0=6-LEN(K$)
          61830 L$=SEG(L$,2,Q0+1)
          61840 L$=REP("",2,1)
          61850 L$=K$&L$
          61860 Q0=6
          61870 RETURN

+++1+++   61880 REM SECTON TO PRINT OUT $>0

          61890 L$=SEG(L$,1,5)
          61900 L$=L$&"E"
          61910 L$=L$&K$
          61920 Q0=6+LEN(K$)
          61930 RETURN

 THE FOLLOWING LINE NUMBERS ARE BRANCHED TO BUT DO NOT EXIST IN THIS TAPE FILE ( # 4 )
 A "-" BEFORE THE LINE NUMBER INDICATES IT IS BRANCHED TO AS A SUBROUTINE (VIA A "GOSUB" OR "ON")
```

FILE # 5

```
        10 DIM X$(4)
        110 PAGE
        120 PRINT
        130 PRINT '                                ID SETS MANAGEMENT'
        210 PRINT 'JJJJJJJ'
        220 PRINT '                                   Programmed by'
        230 PRINT '                              Computer Sciences Corporation'
        240 PRINT '                                 Data Systems Laboratory'
        250 PRINT '                            NATIONAL SPACE TECHNOLOGY LABORATORY'
        260 PRINT '                              NSTL Station, Mississippi 39529'
        300 PRINT 'JJJJ'
        305 X$='GB.1'
        315 PRINT '                                 Version: GB - Production'
        317 PRINT ' '
        320 PRINT '                                      March 10,1982 .'
        325 PRINT 'JJJJ'
        350 PRINT 'PRESS 'RETURN' TO CONTINUE ';
        355 INPUT Q$
        2000 U1=33
        2010 U2=11
        2020 GO TO 2180
        2030 PAGE
        2040 PRINT 'EXTERNAL LABEL';Y$;'IS NOT EQUAL TO TAPE LABEL';A$
        2050 PRINT 'WOULD YOU LIKE TO STOP? (Y/N)'
        2060 INPUT B$
        2070 IF B$<>'Y' THEN 2100
        2080 CLOSE
        2090 PRINT @U2,2;
+++1+++ 2100 END
+++1+++ 2120 PAGE
        2130 PRINT
        2140 PRINT '** error ** this is not the correct tape'
        2150 PRINT 'PRESS 'RETURN' TO CONTINUE ';
        2155 INPUT Q$
        2160 GO TO 2230
+++1+++ 2180 PRINT 'ENTER USER-ID'
        2190 INPUT U$
        2200 PRINT 'ENTER DATE  (ddmmyy)'
        2210 INPUT D$
        2220 PAGE
+++1+++ 2230 PRINT 'INSERT IDS HISTORY TAPE IN EXTERNAL TAPE UNIT # 4924'
        2240 PRINT
        2250 PRINT
        2260 PRINT '*** ENTER EXTERNAL LABEL ON HISTORY TAPE'
        2270 INPUT Z$
        2275 FIND @U2:0
        2280 FIND @U2:1
        2285 A=LEN(Z$)
        2290 INPUT @U2:Y$
        2295 DIM Y$(A)
        2300 IF Z$<>Y$ THEN 2120
        2310 CLOSE
        2320 PAGE
        2325 FIND @U2:0
        2330 FIND @U2:2
        2340 PRINT @U2:U$
        2350 PRINT @U2:D$
        2360 FIND 2
```

2370 OLD

FILE # 6

```
10 U2=11
12 DATA 56
14 DATA 0.25,0.161
15 DATA 0.25,0.144
16 DATA 1.6,1.387
17 DATA 1.6,1.352
18 DATA 2.5,2.026
19 DATA 2.5,2.055
20 DATA 5,3.956
21 DATA 5,4.01
22 DATA 0,0.049
23 DATA 0,0.049
24 DATA 0.1,0.104
25 DATA 0.1,0.112
26 DATA 1,0.876
27 DATA 1,0.865
28 DATA 1,0.875
29 DATA 1,0.856
30 DATA 1,0.825
31 DATA 1,0.866
32 DATA 0.1,0.109
33 DATA 0.1,0.117
34 DATA 0,0.022
35 DATA 0,0.022
36 DATA 5,4.091
37 DATA 5,3.982
38 DATA 2.5,2.068
39 DATA 2.5,2.01
40 DATA 1.6,1.417
41 DATA 1.6,1.393
42 DATA 0.25,0.215
43 DATA 0.25,0.207
44 DATA 0.25,0.152
45 DATA 0.25,0.135
46 DATA 1.6,1.433
47 DATA 1.6,1.457
48 DATA 2.5,2.052
49 DATA 2.5,2.022
50 DATA 5,4
51 DATA 5,3.923
52 DATA 0,0.018
53 DATA 0,0.018
54 DATA 0.1,0.068
55 DATA 0.1,0.068
56 DATA 1,0.868
57 DATA 1,0.857
58 DATA 0.1,0.0986
59 DATA 0.1,0.107
60 DATA 0,0.019
61 DATA 0,0.019
62 DATA 5,4.059
63 DATA 5,4.005
64 DATA 2.5,2.02
65 DATA 2.5,2.005
66 DATA 1.6,1.411
67 DATA 1.6,1.363
68 DATA 0.25,0.205
69 DATA 0.25,0.205
```

```
100 PRINT "ENTER DATE (mm/dd/yy)"
110 INPUT B$
120 PRINT "ENTER HISTORY LABEL (IDSxx...x)"
130 INPUT C$
140 DIM P(34),X0(31),W(7),M9(31),M8(31),00(31),01(31),02(31),03(31)
150 P=0
160 P(6)=1
170 P(3)=1
180 P(29)=1
190 W=0
200 Z=0
210 D7=1
220 K=0
230 X4=0
240 PRINT "INSERT NEW HISTORY TAPE IN UNIT "U2
250 PRINT "PRESS 'RETURN' TO CONTINUE "
260 INPUT Z$
270 FIND @U2:0
280 MARK @U2:1,3000
290 FIND @U2:1
300 C$=C$&B$
310 PRINT @U2:C$
320 PRINT @U2:"002SYSTEM****P"
330 PRINT @U2:"003PLOTFILES*P"
340 PRINT @U2:"004PLOTSGC***P"
350 PRINT @U2:"005HRGB******P"
360 PRINT @U2:"006HQGBQL1.60P"
370 PRINT @U2:"007HQCBQP1.60P"
1000 PRINT @U2,2!
1010 FIND @U2:2
1020 MARK @U2:1,1000
1030 FIND @U2:2
1040 PRINT @U2:"SYSTEM****"
1050 FIND @U2:3
1060 MARK @U2:1,5000
1070 FIND @U2:3
1080 PRINT @U2:"PLOTFILES*"
1090 FIND @U2:4
1100 MARK @U2:1,5000
1110 FIND @U2:4
1120 PRINT @U2:"PLOTSGC***"
2000 FIND @U2:5
2010 MARK @U2:3,5000
2020 P=0
2030 W1=0
2040 P(7)=1
2050 READ P(8)
2060 DIM X(P(8)),Y(P(8))
2070 FOR I=1 TO P(8)
2080  READ X(I),Y(I)
2090 NEXT I
2100 M1=0
2110 M2=0
2120 M3=0
2130 M4=0
2140 M5=0
2150 W=0
2160 W0=1
2170 FOR I=1 TO P(8)
2180  M1=M1+X(I)*W0
```

```
2190  M2=M2+Y(I)*W0
2200  M3=M3+X(I)*X(I)*W0
2210  M4=M4+Y(I)*Y(I)*W0
2220  M5=M5+Y(I)*X(I)*W0
2230  W1=W1+W0
2240 NEXT I
2250 C=W1*M3-M1^2
2260 P(10)=W1/C
2270 P(11)=M1/C
2280 P(12)=M3/C
2290 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2300 P(1)=(M2-P(2)*M1)/W1
2310 P(4)=P(1)
2320 P(5)=P(2)
2330 D=0
2340 FOR I=1 TO P(8)
2350  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2360 NEXT I
2370 P(23)=1-D/(M4-M2^2/P(8))
2380 P(3)=1
2390 P(6)=D/(P(8)-2)
2400 P(9)=1
2410 P(29)=1
2420 P(27)=P(6)
2430 FIND @U2:5
2440 PRINT @U2:"HRGB******P"
2450 PRINT @U2:B$,P
2460 PPRINT @U2,2:
2470 FIND @U2:6

2480 REM                              PRINT "ENTER QL HISTORY FOR  1.6
2490 REM                 PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR 1.6

2500 M1=1.6

2510 REM                 PRINT "ENTER S.D.(OR STANDARD) FOR 1.6

2520 M2=0.032

2530 REM       PRINT "ENTER LOWER LIMIT FOR ACCURACY"

2540 I=1.54
2550 00=I

2560 REM          PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2570 I=1.66
2580 01=I

2590 REM      PRINT "ENTER LOWER LIMIT FOR PRECISION"

2600 I=0
2610 02=I

2620 REM                      PRINT "ENTER UPPER LIMIT FOR PRECISION"

2630 I=0.073
2640 03=I
2650 07=3
2660 K=0
```

```
2670 X0=0
2680 W=0
2690 Z=0
2700 M9=M1
2710 M8=M2
2720 PRINT @02:"HOGBOL1.60#"
2730 PRINT @02:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
2740 FIND @02:7

2750 REM      PRINT "ENTER OP HISTORY FOR 1.60"
2760 REM   PRINT "ENTER MEAN (OR STANDARD) FOR 1.60"

2770 M1=1.6

2780 REM                  PRINT "ENTER S:D.(OR STANDARD) FOR 1.60"

2790 M2=0.053

2800 REM          PRINT "ENTER LOWER LIMIT FOR ACCURACY"

2810 I=1.5
2820 00=I

2830 REM        PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2840 I=1.7
2850 01=I

2860 REM        PRINT "ENTER LOWER LIMIT FOR PRECISION"

2870 I=0
2880 02=I

2890 REM                  PRINT "ENTER UPPER LIMIT FOR PRECISION"

2900 I=0.12
2910 03=I
2920 M9=M1
2930 M8=M2
2940 PRINT @02:"HOGPOP1.60#"
2950 PRINT @02:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
2960 PRINT @02,2:
2970 CLOSE
2980 FIND 1
2990 OLD

3000 REM END OF PROGRAM
```

FILE # 7

```
100 INIT
110 PRINT @32,26:0

120 REM
130 REM THIS PROGRAM IS SUPPOSED TO UPDATE THE HISTORY FILE BETWEEN
140 REM EACH DAILY RUN.  IT IS SUPPOSED TO LEAVE IN THE INFORMATION
150 REM ABOUT PREVIOUS DAYS SO THAT THE QC PLOTS WILL SHOW DAILY
160 REM PROGRESS.  IT IS SUPPOSED TO REMOVE THE INDIVIDUAL PLOT FILES
170 REM SO THAT A "FRESH" HISTORY TAPE EACH DAY.
180 REM
190 REM   DATE:  05/04/81
200 REM AUTHOR:  COMPUTER SCIENCES CORPORATION
210 REM          ISAAC WILLY TRAXLER
220 REM          NSTL STATION, MS
230 REM
240 REM
250 REM DO SOME PRELIMINARIES

260 U1=33
270 PAGE
280 PRINT " BEGIN PROGRAM TO UPDATE HISTORY TAPE"
290 PRINT " INSERT HISTORY TAPE INTO INTERNAL TAPE DRIVE"
300 PRINT " MAKE SURE WRITE PROTECT IS NOT ON SAFE"
310 PRINT " PRESS HOME PAGE TO START PROGRAM"
320 PRINT "&J"
330 PRINT " BEGIN PROCESSING"

340 REM  U1 - DEVICE NUMBER OF INTERNAL TAPE DRIVE
350 REM  A$ - LINE 1 OF FILE 1
360 REM  B$ - LINE 2 OF FILE 1
370 REM  C$ - LINE 3 OF FILE 1
380 REM  D$ - LINE 4 OF FILE 1
390 REM  E$ - LINE 5 OF FILE 1
400 REM  F$ - LINE 6 OF FILE 1
410 REM  G$ - LINE 7 OF FILE 1
420 REM  I  - USED AS A TEMPORARY INDEX VARIABLE
430 REM
439 REM    *** SECTION TO UPDATE FILE 1 ***

450 FIND 1
460 INPUT @U1:A$
470 INPUT @U1:B$
480 INPUT @U1:C$
490 INPUT @U1:D$
500 INPUT @U1:E$
510 INPUT @U1:F$
520 INPUT @U1:G$
530 CLOSE
540 FIND 1
550 PRINT @U1:A$
560 PRINT @U1:B$
570 PRINT @U1:C$
580 PRINT @U1:D$
590 PRINT @U1:E$
600 PRINT @U1:F$
610 PRINT @U1:G$
620 CLOSE
```

```
630 REM  END OF FILE 1 SECTION
640 REM PUT TAPE AT BEGINNING OF FILE

650 FIND 0

660 REM  *** SECTION FOR FILE 2 ***

670 FIND 2
680 PRINT @U1:"!SYSTEM****"
690 CLOSE

700 REM  *** END OF FILE 2 SECTION ***
710 REM  FIND BEGINNING OF TAPE

720 FIND 0

730 REM  *** SECTION FOR FILE 3 ***

740 FIND 3
750 PRINT @U1:"PLOTFILES**"
760 CLOSE

770 REM  *** END OF SECTION FOR FILE 3 ***
780 REM FIND BEGINNING OF TAPE

790 FIND 0

800 REM  *** SECTION FOR FILE 4 ***

810 FIND 4
820 PRINT @U1:"PLOTSOC***"
830 CLOSE
840 PRINT
850 PRINT
860 PRINT
870 PRINT
880 PRINT
890 PRINT "TAPE PROCESSING FINISHED"
900 PRINT
910 PRINT "YOU MAY REMOVE THE TAPE NOW"
920 PRINT
930 PRINT "INSERT STATISTICS PROGRAM TAPE INTO INTERNAL TAPE DRIVE"
940 PRINT "PRESS 'HOME PAGE' TO CONTINUE"
950 PRINT "END"
960 FIND 1
970 OLD

980 REM END OF PROGRAM
```

FILE # 8

```
2060 P=0
2065 W1=0
2072 P(7)=1
2080 READ P(8)
2090 DIM X(P(8)),Y(P(8))
2100 FOR I=1 TO P(8)
2120  READ X(I),Y(I)
2130 NEXT I
2140 M1=0
2150 M2=0
2160 M3=0
2170 M4=0
2180 M5=0
2185 W=0
2187 W0=1
2190 FOR I=1 TO P(8)
2200  M1=M1+X(I)*W0
2210  M2=M2+Y(I)*W0
2220  M3=M3+X(I)*X(I)*W0
2230  M4=M4+Y(I)*Y(I)*W0
2240  M5=M5+Y(I)*X(I)*W0
2245  W1=W1+W0
2250 NEXT I
2260 C=W1*M3-M1^2
2270 P(10)=W1/C
2280 P(11)=M1/C
2290 P(12)=M3/C
2300 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2310 P(1)=(M2-P(2)*M1)/W1
2320 P(4)=P(1)
2330 P(5)=P(2)
2340 D=0
2350 FOR I=1 TO P(8)
2360  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2370 NEXT I
2380 P(23)=1-D/(M4-M2^2/P(8))
2390 P(3)=2
2400 P(6)=D/(P(8)-2)
2410 P(9)=1
2420 P(29)=1
2430 P(27)=P(6)
```

FILE # 9

```
10 U2=11
100 PRINT "ENTER DATE (mm/dd/yy)"
110 INPUT B$
120 PRINT "ENTER HISTORY LABEL (IDSxx...x)"
130 INPUT C$
140 DIM P(34),X0(31),W(7),M9(31),M8(31),00(31),01(31),02(31),03(31)
150 P=0
160 P(6)=1
170 P(3)=1
180 P(29)=1
190 W=0
200 Z=0
210 D7=1
220 K=0
230 X4=0
240 PRINT "INSERT NEW HISTORY TAPE IN UNIT "U2
250 PRINT "PRESS 'RETURN' TO CONTINUE "
260 INPUT Z$
270 FIND @U2:0
280 MARK @U2:1,3000
290 FIND @U2:1
300 C$=C$&B$
310 PRINT @U2:C$
320 PRINT @U2:"002SYSTEM****P"
330 PRINT @U2:"003PLOTFILES*P"
340 PRINT @U2:"004PLOTSOC***P"
350 PRINT @U2:"005HRGB******P"
360 PRINT @U2:"006HRGBAL.108P"
370 PRINT @U2:"007HRGBAL.216P"
1000 PRINT @U2,2:
1010 FIND @U2:2
1020 MARK @U2:1,1000
1030 FIND @U2:2
1040 PRINT @U2:"SYSTEM****"
1050 FIND @U2:3
1060 MARK @U2:1,5000
1070 FIND @U2:3
1080 PRINT @U2:"PLOTFILES*"
1090 FIND @U2:4
1100 MARK @U2:1,5000
1110 FIND @U2:4
1120 PRINT @U2:"PLOTSOC***"
2000 FIND @U2:5
2010 MARK @U2:3,5000
2020 P=0
2030 U1=0
2040 P(7)=1
2050 READ P(8)
2060 DIM X(P(8)),Y(P(8))
2070 FOR I=1 TO P(8)
2080   READ X(I),Y(I)
2090 NEXT I
2100 M1=0
2110 M2=0
2120 M3=0
2130 M4=0
```

```
2160 W0=1
2170 FOR I=1 TO P(8)
2180  M1=M1+X(I)*W0
2190  M2=M2+Y(I)*W0
2200  M3=M3+X(I)*X(I)*W0
2210  M4=M4+Y(I)*Y(I)*W0
2220  M5=M5+Y(I)*X(I)*W0
2230  W1=W1+W0
2240 NEXT I
2250 C=W1*M3-M1^2
2260 P(10)=W1/C
2270 P(11)=M1/C
2280 P(12)=M3/C
2290 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2300 P(1)=(M2-P(2)*M1)/W1
2310 P(4)=P(1)
2320 P(5)=P(2)
2330 D=0
2340 FOR I=1 TO P(8)
2350  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2360 NEXT I
2370 P(23)=1-D/(M4-M2^2/P(8))
2380 P(3)=2
2390 P(6)=D/(P(8)-2)
2400 P(9)=1
2410 P(29)=1
2420 P(27)=P(6)
2430 FIND @U2:5
2440 PRINT @U2:"HRGD******P"
2450 PRINT @U2:B$,P
2460 PRINT @U2,2:
2470 FIND @U2:6
2480 PRINT "ENTER QL HISTORY FOR .108"
2490 PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR .108"
2500 INPUT M1
2510 PRINT "ENTER S.D.(OR STANDARD) FOR .108"
2520 INPUT M2
2530 PRINT "ENTER LOWER LIMIT FOR ACCURACY"
2540 INPUT I
2550 O0=I
2560 PRINT "ENTER UPPER LIMIT FOR ACCURACY"
2570 INPUT I
2580 O1=I
2590 PRINT "ENTER LOWER LIMIT FOR PRECISION"
2600 INPUT I
2610 O2=I
2620 PRINT "ENTER UPPER LIMIT FOR PRECISION"
2630 INPUT I
2640 O3=I
2650 D7=31
2660 K=0
2670 X0=0
2680 W=0
2690 Z=0
2700 M9=M1
2710 M8=M2
2720 PRINT @U2:"HOGBQL.108"
2730 PRINT @U2:K,D7,X0,X0,M9,O1,O0,X0,M8,O3,O2,W,W,K,K,K,K
2740 FIND @U2:7
2750 PRINT "ENTER QL HISTORY FOR .216"
```

```
2760 PRINT "ENTER MEAN (OR STANDARD) FOR .216"
2770 INPUT M1
2780 PRINT "ENTER S.D.(OR STANDARD) FOR .216"
2790 INPUT M2
2800 PRINT "ENTER LOWER LIMIT FOR ACCURACY"
2810 INPUT I
2820 O0=I
2830 PRINT "ENTER UPPER LIMIT FOR ACCURACY"
2840 INPUT I
2850 O1=I
2860 PRINT "ENTER LOWER LIMIT FOR PRECISION"
2870 INPUT I
2880 O2=I
2890 PRINT "ENTER UPPER LIMIT FOR PRECISION"
2900 INPUT I
2910 O3=I
2920 M9=M1
2930 M8=M2
2940 PRINT @U2:"H00B0L.216#"
2950 PRINT @U2:K,D7,X0,X0,M9,O1,O0,X0,M8,O3,O2,W,W,K,K,K,K
2960 PRINT @U2,2;
2970 CLOSE
2980 FIND 1
2990 OLD

3000 REM END OF PROGRAM
```

FILE # 10

```
10 U2=11
12 DATA 5
14 DATA 0,0.05321
16 DATA 0.1,0.202791
18 DATA 0.8,0.774289
20 DATA 1.3,1.355521
22 DATA 4.1,4.237828
24 DATA 0,0.158099
100 PRINT "ENTER DATE (mm/dd/yy)"
110 INPUT B$
120 PRINT "ENTER HISTORY LABEL (IDSxx,...x)"
130 INPUT C$
140 DIM P(34),X0(31),W(7),M9(31),M8(31),00(31),01(31),02(31),03(31)
150 P=0
160 P(6)=1
170 P(3)=1
180 P(29)=1
190 W=0
200 Z=0
210 D7=1
220 K=0
230 X4=0
240 PRINT "INSERT NEW HISTORY TAPE IN UNIT ";U2
250 PRINT "PRESS 'RETURN' TO CONTINUE "
260 INPUT Z$
270 FIND @U2:0
280 MARK @U2:1,3000
290 FIND @U2:1
300 C$=C$&B$
310 PRINT @U2:C$
320 PRINT @U2:"002SYSTEM***P"
330 PRINT @U2:"003PLOTFILES*P"
340 PRINT @U2:"004PLOTSQC***P"
350 PRINT @U2:"005HRGD******P"
360 PRINT @U2:"006HRGB0L1.60P"
370 PRINT @U2:"007HRGB0P1.60P"
1000 PRINT @U2,2;
1010 FIND @U2:2
1020 MARK @U2:1,1000
1030 FIND @U2:2
1040 PRINT @U2;"SYSTEM****"
1050 FIND @U2:3
1060 MARK @U2:1,5000
1070 FIND @U2:3
1080 PRINT @U2;"PLOTFILES*"
1090 FIND @U2:4
1100 MARK @U2:1,5000
1110 FIND @U2:4
1120 PRINT @U2;"PLOTSQC***"
2000 FIND @U2:5
2010 MARK @U2:3,5000
2020 P=0
2030 W1=0
2040 P(7)=1
2050 READ P(8)
2060 DIM X(P(8)),Y(P(8))
2070 FOR I=1 TO P(8)
2080  READ X(I),Y(I)
```

```
2090 NEXT I
2100 M1=0
2110 M2=0
2120 M3=0
2130 M4=0
2140 M5=0
2150 W=0
2160 W0=1
2170 FOR I=1 TO P(8)
2180  M1=M1+X(I)*W0
2190  M2=M2+Y(I)*W0
2200  M3=M3+X(I)*X(I)*W0
2210  M4=M4+Y(I)*Y(I)*W0
2220  M5=M5+Y(I)*X(I)*W0
2230  W1=W1+W0
2240 NEXT I
2250 C=W1*M3-M1^2
2260 P(10)=W1/C
2270 P(11)=M1/C
2280 P(12)=M3/C
2290 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2300 P(1)=(M2-P(2)*M1)/W1
2310 P(4)=P(1)
2320 P(5)=P(2)
2330 D=0
2340 FOR I=1 TO P(8)
2350  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2360 NEXT I
2370 P(23)=1-D/(M4-M2^2/P(8))
2380 P(3)=2
2390 P(6)=D/(P(8)-2)
2400 P(9)=1
2410 P(29)=1
2420 P(27)=P(6)
2430 FIND @U2:5
2440 PRINT @U2:"HRGD******P"
2450 PRINT @U2:B$,P
2460 PRINT @U2,2:
2470 FIND @U2:6

2480 REM                          PRINT "ENTER QL HISTORY FOR  1.6
2490 REM                  PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR 1.6

2500 M1=1.6

2510 REM              PRINT "ENTER S.D.(OR STANDARD) FOR 1.6

2520 M2=0.032

2530 REM      PRINT "ENTER LOWER LIMIT FOR ACCURACY".

2540 I=1.54
2550 D0=I

2560 REM        PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2570 I=1.66
2580 D1=I

2590 REM      PRINT "ENTER LOWER LIMIT FOR PRECISION"
```

```
2600 I=0
2610 O2=I

2620 REM                    PRINT "ENTER UPPER LIMIT FOR PRECISION"

2630 I=0.073
2640 O3=I
2650 D7=31
2660 K=0
2670 X0=0
2680 W=0
2690 Z=0
2700 M9=M1
2710 M8=M2
2720 PRINT @U2:"HQGBQL1.60*"
2730 PRINT @U2:K,D7,X0,X0,M9,O1,O0,X0,M8,O3,O2,W,W,K,K,K,K
2740 FIND @U2:7

2750 REM      PRINT "ENTER QP HISTOR FOR 1.60"
2760 REM   PRINT "ENTER MEAN (OR STANDARD) FOR 1.60"

2770 M1=1.6

2780 REM                PRINT "ENTER S.D.(OR STANDARD) FOR 1.60"

2790 M2=0.053

2800 REM         PRINT "ENTER LOWER LIMIT FOR ACCURACY"

2810 I=1.5
2820 O0=I

2830 REM         PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2840 I=1.7
2850 O1=I

2860 REM         PRINT "ENTER LOWER LIMIT FOR PRECISION"

2870 I=0
2880 O2=I

2890 REM                PRINT "ENTER UPPER LIMIT FOR PRECISION"

2900 I=0.12
2910 O3=I
2920 M9=M1
2930 M8=M2
2940 PRINT @U2:"HQGBQP1.60*"
2950 PRINT @U2:K,D7,X0,X0,M9,O1,O0,X0,M8,O3,O2,W,W,K,K,K,K
2960 PRINT @U2:2:
2970 CLOSE
2980 FIND 1
2990 OLD

3000 REM END OF PROGRAM
```

FILE # 11

```
10 U2=11
12 DATA 56
14 DATA 0.25,0.161
15 DATA 0.25,0.144
16 DATA 1.6,1.387
17 DATA 1.6,1.352
18 DATA 2.5,2.026
19 DATA 2.5,2.055
20 DATA 5,3.956
21 DATA 5,4.01
22 DATA 0,0.049
23 DATA 0,0.047
24 DATA 0.1,0.104
25 DATA 0.1,0.112
26 DATA 1,0.876
27 DATA 1,0.865
28 DATA 1,0.875
29 DATA 1,0.856
30 DATA 1,0.825
31 DATA 1,0.866
32 DATA 0.1,0.109
33 DATA 0.1,0.117
34 DATA 0,0.022
35 DATA 0,0.022
36 DATA 5,4.091
37 DATA 5,3.982
38 DATA 2.5,2.068
39 DATA 2.5,2.01
40 DATA 1.6,1.417
41 DATA 1.6,1.393
42 DATA 0.25,0.215
43 DATA 0.25,0.207
44 DATA 0.25,0.152
45 DATA 0.25,0.135
46 DATA 1.6,1.433
47 DATA 1.6,1.457
48 DATA 2.5,2.052
49 DATA 2.5,2.022
50 DATA 5,4
51 DATA 5,3.923
52 DATA 0,0.018
53 DATA 0,0.018
54 DATA 0.1,0.068
55 DATA 0.1,0.068
56 DATA 1,0.868
57 DATA 1,0.857
58 DATA 0.1,0.0986
59 DATA 0.1,0.107
60 DATA 0,0.019
61 DATA 0,0.019
62 DATA 5,4.059
63 DATA 5,4.005
64 DATA 2.5,2.02
65 DATA 2.5,2.005
66 DATA 1.6,1.411
67 DATA 1.6,1.363
68 DATA 0.25,0.205
69 DATA 0.25,0.205
```

```
100 PRINT "ENTER DATE (mm/dd/yy)"
110 INPUT B$
120 PRINT "ENTER HISTORY LABEL (IDSxx...x)"
130 INPUT C$
140 DIM P(34),X0(31),W(7),M9(31),M8(31),00(31),01(31),02(31),03(31)
150 P=0
160 P(6)=1
170 P(3)=1
180 P(29)=1
190 W=0
200 Z=0
210 D7=1
220 K=0
230 X4=0
240 PRINT "INSERT NEW HISTORY TAPE IN UNIT "U2
250 PRINT "PRESS 'RETURN' TO CONTINUE "
260 INPUT Z$
270 FIND @U2:0
280 MARK @U2:1,3000
290 FIND @U2:1
300 C$=C$$B$
310 PRINT @U2:C$
320 PRINT @U2:"002SYSTEM****P"
330 PRINT @U2:"003PLOTFILES*P"
340 PRINT @U2:"004PLOTSQC***P"
350 PRINT @U2:"005HRGB******P"
360 PRINT @U2:"006HQGBQL1.60P"
370 PRINT @U2:"007HQGBQP1.60P"
1000 PRINT @U2,2;
1010 FIND @U2:2
1020 MARK @U2:1,1000
1030 FIND @U2:2
1040 PRINT @U2:"SYSTEM****"
1050 FIND @U2:3
1060 MARK @U2:1,5000
1070 FIND @U2:3
1080 PRINT @U2:"PLOTFILES*"
1090 FIND @U2:4
1100 MARK @U2:1,5000
1110 FIND @U2:4
1120 PRINT @U2:"PLOTSQC***"
2000 FIND @U2:5
2010 MARK @U2:3,5000
2020 P=0
2030 W1=0
2040 P(7)=1
2050 READ P(8)
2060 DIM X(P(8)),Y(P(8))
2070 FOR I=1 TO P(8)
2080  READ X(I),Y(I)
2090 NEXT I
2100 M1=0
2110 M2=0
2120 M3=0
2130 M4=0
2140 M5=0
2150 W=0
2160 W0=1
2170 FOR I=1 TO P(8)
2180  M1=M1+X(I)*W0
```

```
2190  M2=M2+Y(I)*W0
2200  M3=M3+X(I)*X(I)*W0
2210  M4=M4+Y(I)*Y(I)*W0
2220  M5=M5+Y(I)*X(I)*W0
2230  W1=W1+W0
2240 NEXT I
2250 C=W1*M3-M1^2
2260 P(10)=W1/C
2270 P(11)=M1/C
2280 P(12)=M3/C
2290 P(2)=(W1*M5-M1*M2)/(W1*M3-M1^2)
2300 P(1)=(M2-P(2)*M1)/W1
2310 P(4)=P(1)
2320 P(5)=P(2)
2330 D=0
2340 FOR I=1 TO P(8)
2350  D=D+(Y(I)-P(1)-P(2)*X(I))^2
2360 NEXT I
2370 P(23)=1-D/(M4-M2^2/P(8))
2380 P(3)=2
2390 P(6)=D/(P(8)-2)
2400 P(9)=1
2410 P(29)=1
2420 P(27)=P(6)
2430 FIND @U2:5
2440 PRINT @U2:"HRGB******P"
2450 PRINT @U2:B$,P
2460 PRINT @U2,2;
2470 FIND @U2:6

2480 REM                              PRINT "ENTER OL HISTORY FOR  1.6
2490 REM                    PRINT "ENTER MEAN(OR CENTRAL STANDARD) FOR 1.6

2500 M1=1.6

2510 REM                  PRINT "ENTER S.D.(OR STANDARD) FOR 1.6

2520 M2=0.032

2530 REM       PRINT "ENTER LOWER LIMIT FOR ACCURACY"

2540 I=1.54
2550 O0=I

2560 REM         PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2570 I=1.66
2580 O1=I

2590 REM      PRINT "ENTER LOWER LIMIT FOR PRECISION"

2600 I=0
2610 O2=I

2620 REM                    PRINT "ENTER UPPER LIMIT FOR PRECISION"

2630 I=0.073
2640 O3=I
2650 D7=31
2660 K=0
```

```
2670 X0=0
2680 W=0
2690 Z=0
2700 M9=M1
2710 M8=M2
2720 PRINT @U2:"HQGBQL1.60#"
2730 PRINT @U2:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
2740 FIND @U2:7

2750 REM      PRINT "ENTER QP HISTORY FOR 1.60"
2760 REM   PRINT "ENTER MEAN (OR STANDARD) FOR 1.60"

2770 M1=1.6

2780 REM                  PRINT "ENTER S.D.(OR STANDARD) FOR 1.60"

2790 M2=0.053

2800 REM         PRINT "ENTER LOWER LIMIT FOR ACCURACY"

2810 I=1.5
2820 00=I

2830 REM        PRINT "ENTER UPPER LIMIT FOR ACCURACY"

2840 I=1.7
2850 01=I

2860 REM        PRINT "ENTER LOWER LIMIT FOR PRECISION"

2870 I=0
2880 02=I

2890 REM                  PRINT "ENTER UPPER LIMIT FOR PRECISION"

2900 I=0.12
2910 03=I
2920 M9=M1
2930 M8=M2
2940 PRINT @U2:"HQGBQP1.60#"
2950 PRINT @U2:K,D7,X0,X0,M9,01,00,X0,M8,03,02,W,W,K,K,K,K
2960 PRINT @U2,2:
2970 CLOSE
2980 FIND 1
2990 OLD

3000 REM END OF PROGRAM
```

FILE # 12

```
         1 GO TO 100
         4 INPUT @11,30:A
         5 PRINT @41;"L"
*******  100 PRINT "ENTER FILE NUMBER"
         110 INPUT F
         115 PRINT @41;"FILE NUMBER:";F
         120 FIND @11:F
*******  130 INPUT @11:A$
         140 PRINT A$
         150 PRINT @41:A$
         160 GO TO 130
```